

## PREFACE

Economic doctrine has taken long strides in recent years. The tendency has been to make it not only more correct and precise but also more relevant to conditions as they obtain in the work-a-day world. In the process arguments in many spheres have tended to become more complicated. I have endeavoured to state the theory in as lucid and intelligible a manner as possible. If, in spite of it, certain parts warrant concentrated attention, the explanation lies in the matter which has to be handled. I must frankly admit that I have not tried to maintain simplicity at the cost of preciseness, or by elimination of latest studies.

The book is intended to meet the requirements of Degree students of Indian Universities. I am not unaware of the fact that there is a great diversity in standards of our various universities. I have, therefore, relegated some points to the footnotes and some others to appendices so that those who are not interested in details, may skip over them. For the rest I leave it to the teachers to guide the students in their choice.

The book will also prove of great value to the candidates for the I.A.S. and Allied Services. Of course, it would be idle to suggest that an aspirant to these high posts can depend for any paper solely on any single book. Yet if papers set in the past are any guide, the book will certainly be immensely helpful both for the paper on General Economics as well as Advanced Economics.

Economic theory is universal in the sense that it makes certain assumptions regarding human nature which are universally valid. It is, however, relative in the sense that social conditions and stages of economic development differ from region to region. I have kept conditions prevailing in India actively in mind. I have drawn illustrations from her history and the problems facing the country today. For this reason, the book will be found useful by the students in the underdeveloped and undeveloped areas.

At many places reference becomes necessary to arguments which have been developed in previous pages. For the convenience of the readers it has been considered expedient to repeat the arguments, briefly or otherwise at places. Some readers may consider it a needless repetition, but there will be many, I hope, who will find it helpful.

It has begun to be realised in many quarters that the study of Economics must be preceded by a short course in Mathematics. Some basic knowledge of mathematical methods and concepts is indispensable to the grasp of modern Economic Theory. The student must possess some knowledge of algebraic equations and use of graphs. A knowl-

edge of the meanings of  $\Delta Y$  and  $\frac{\Delta Y}{\Delta X}$  is also essential.

## PREFACE

It is rather difficult to apportion one's knowledge between literature available on the subject and one's teachers and friends. One is certainly obliged to all these sources for whatever one does. I must, however, specially thank my colleagues, Shri Dharam Narain, Shri B. B. Julka and Shri Budhishwar Rai for the co-operation which they extended to me at various stages in the preparation of the book. Shri Budhishwar Rai helped me in writing the last chapter. A colleague could not show a greater consideration.

I have no words to express my gratitude to Shri A. B. Ghosh of Delhi School of Economics. He so kindly and intensively went through the manuscript and made numerous valuable suggestions. I can hardly ever repay the debt.

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J. D. Khatri

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## CHAPTER I

### SCOPE AND PURPOSE

#### THE SUBJECT-MATTER OF ECONOMICS

*Character description and definition.* There are two methods of approach to the question of subject-matter of Economics. One is to enumerate the topics which fall within its range. This procedure has the advantage that it is possible to draw a list of topics on which most economists would agree. For instance it is generally agreed that Economics deals with matters like incomes, employment, prices, consumption, savings, investment, borrowing, lending etc., etc. The limitation of this method, however, is that we can never be sure that the 'list' so drawn is exhaustive. Every time a new topic is suggested for inclusion in this course of study, we will have to appeal to the opinions of leading economists to come to a decision. And the decision will inevitably be arbitrary.

The other method is that of definition. The definition of a subject must set forth the criterion on the basis of which is decided which problems fall within its purview. In other words, it specifies the characteristic (or characteristics) common to the topics included in the study and absent from those which are excluded. Unfortunately, there is a disagreement among the economists regarding what is the denominator common to all economic problems. A number of definitions have been advanced. We shall state and examine three of them.

*Smith and Say.* "Economics is the science of wealth"—this definition is generally attributed to Adam Smith. This sentence does not exist anywhere in his works. There are, nevertheless, reasons to believe that if he had given a definition, it would have run in this strain. He named his book 'An Enquiry Into The Nature And Causes Of Wealth Of Nations'. Secondly, he considered economics<sup>1</sup> as synonymous with a study of "the nature and causes of wealth of nations".<sup>2</sup> Thirdly, he mentioned two distinct objects of political economy, viz. to enrich the people and the sovereign. Lastly, J. B. Say, the most important expositor of his thought, defined the subject as a study of the laws which govern wealth.

The familiar topics of discussion enumerated above (incomes, employment, etc.) have this feature in common that they relate to the procurement and use of wealth. Thus, then is the characteristic which, according to the classical economists is the common denominator of economic problems.

<sup>1</sup> He uses the old name viz., *Political Economy*.

<sup>2</sup> *An Enquiry Into The Nature And Causes Of Wealth Of Nations* (Cannan Edition), p. 643.

*Alfred Marshall.* According to Dr. Alfred Marshall, "Political Economy or Economics is the study of mankind in the ordinary business of life. It examines that part of individual and social action which is most closely connected with the attainment and with the use of material requisites of well-being."<sup>3</sup> Every person spends his day in various kinds activities. He may, for instance, attend religious meetings, go out for a walk, join some marriage party, attend to his business, go out shopping, play with his children, etc., etc. These different kinds of activities claim his time, thought and exertion. The attainment and use of wealth claim more time and thought than any of his other activities. Such activities constitute the ordinary business of life. Not only is a major portion of his active life spent in these activities, they also claim the choicest hours of the day, hours during which he is at his best. Also, motives behind these activities, that is, the desire to have a high standard of living for himself and for his family, exert a very powerful influence on his actions. Religious motives, patriotism, and love may exert a stronger influence than economic motives, but the latter predominate and exert themselves more frequently. Economics thus deals with our wealth-getting and wealth-spending activities which claim most of our time and which are inspired by motives which exert a strong as well as frequent influence on our life.

Dr. Marshall did a great service to the science of Economics by stressing the human aspect of its study. Economics is a study of wealth, but the more important fact about it is that it is a study of man. It deals with men and not with things as such. The interest of the student of Economics in things is only a derived one. Wealth, which lies beyond the reach of man or which cannot otherwise be yoked into service for mankind, is outside the scope of economic study. Paramount importance is thus to be attached to man in all economic analysis.

The most important fact which flows from this stress on human aspect of the science is that the ultimate object is to promote human welfare. Economics is concerned with earning and using material requisites of well-being. It is, of course, the duty of the economist to study facts and formulate generalisations. But of what use is such a study if the generalisations are not further employed for the promotion of human welfare? Poverty breeds misery and degradation. The economist aims at gradually reducing its intensity and ultimately completely extirpating it.

Economics deals with actions of economic or industrial groups. It studies how the producers, the consumers, the borrowers, the lenders, the bankers and other such groups are likely to act under given circumstances. Economics also takes note of individual actions, e.g., what a producer or a consumer is likely to do when conditions change in some given manner. But actions of isolated individuals do not interest the economist. Individuals may

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<sup>3</sup> *Principle Of Economics* (Eighth Edition), p. 1.

have their economic problems but the economist enters the field only when individual action comes to have a social significance. Economics thus deals with man as a social being. It is a social science, a branch of sociology.

Lastly Marshall pointed out that economic studies must proceed on scientific lines. The purpose may be to find out remedies of economic ills, but a scientific study cannot proceed with an eye strictly on the practical problems. The economist must be prepared to tackle not only those problems which face mankind today, but also those which are likely to face them in future. The economist keeps his feet on the ground. But practical considerations are not his only guide. If he concentrates on actual problems only, his efforts would end in a bundle of bits of knowledge. There will, then, be no science of Economics. In fact the process of reasoning may sometimes lead him to conclusions which are not of any practical importance today. Yet he ought to state and record those conclusions.

*Lionel Robbins* The other definition which deserves consideration is that of Professor Lionel Robbins. Adam Smith spoke of increasing the wealth of a country by improving its productive powers and hence production. Extension of division of labour and increase of capital were suggested as the roads to prosperity. He, however, did not consider what has come to be called the allocative aspect of economic problems. Would for example society be prosperous if every country in the world specialised in the production of pins only? Obviously not! A large variety of goods have to be produced and the resources available have to be allocated among them. Robbins has defined Economics in terms of this allocative aspect of human activity.

He starts with a criticism of other definitions, especially Marshall's. The phrase 'material requisites of well being' comes under heavy fire. Wages of a teacher or a juggler result from services which do not produce any material goods and these wages may be spent on immaterial services like a theatrical show. Their earnings are as much the subject matter of Economics as any other earnings. Even Marshall himself would have included their services in productive labour, because they command a price in the market. And yet, their wages have neither been earned by producing material goods, nor have they been spent on any material requisites of well being.

Robbins enumerates conditions which give rise to an economic problem. Human wants are multiple and various. Their number is infinite and their variety unlimited. An attempt to prepare a complete list of the wants of any normal person must prove abortive. Time and resources available to man to meet his wants are limited. He cannot satisfy all his wants. Human behaviour in these circumstances assumes the form of choice making. Making of choice between ends in the allocation of scarce means is the characteristic common to all economic problems. Here is the key to arriving at a definition of Economics.

In fact, two more conditions are indispensable to the existence of choice. The resources are capable of alternative application. Time can be employed in work or for leisure. Land can be used for building or for cultivation of different crops. If the resources are scarce but can be used only for specific purposes and have no alternative uses, the question of choice would not arise. Also, choice would not involve any exercise of judgment if all wants were equally important. There will be no problem, unless wants are of unequal importance.

✓ Thus there are four characteristics of every economic problem—ends are multiple; they are of unequal importance; means to achieve the ends are scarce; and they are capable of application towards alternative ends. Human behaviour in situations where these four conditions hold good, forms the subject-matter of Economics. It studies human behaviour in the allocation of scarce means to multiple ends. To quote Robbins; ‘Economics is the science which studies human behaviour as a relationship between ends and scarce means which have alternative uses’<sup>4</sup>.

The word ‘scarcity’ is not to be interpreted in any absolute sense. We do not fix upon a quantity and say that if the actual amount is less than that quantity, the thing is scarce. All depends upon demand. Scarcity means that the quantity is limited as compared with demand. The same quantity of tomatoes becomes more scarce in a community as soon as its vitamin-value comes to be known. A few years back, large heaps of tin-scrap were lying in Delhi at various places and tin-scrap was not a scarce commodity; it was a free good. As soon as it was found that the Japanese have a use for it, the same quantity of it became scarce. Thus, there is nothing intrinsic in a quantity which makes it scarce. It is the extent of demand which makes a good free or scarce.

That aspect of human behaviour which consists in the application of scarce means to multiple ends constitutes the economist’s field of study. The economist is concerned neither with means nor with ends as such. Time at our command is given—twenty-four hours in a day. Resources are also what they are. Nor does the economist uphold one kind of wants and condemn another kind. He is neutral as between them. Resources, on the one hand, and wants of the people on the other, are given data with which he starts and studies how the former are disposed of for the satisfaction of the latter.

✓ It must be noted that Robbins’ definition is analytical as compared with Marshall’s which is classificatory. Marshallian approach would divide the activities of man into two categories, one being economic activities and the other non-economic activities. On Robbins’ approach, it is only one aspect of human activity, the scarcity or the choice aspect, which is studied.

<sup>1</sup> Robbins has been called a modern Ricardo. Like Ricardo he presents a terse but powerful deductive logic. He also believes

<sup>4</sup> *An Essay On The Nature And Significance Of Economic Science*, p. 16.

in the universality of economic laws. But the most important Ricardian feature in Robbins' definition is that Economics is to be divorced from the question of welfare. The term welfare has ethical implications and the economist has no right to be a moralist. Economics if it is to be studied as a science, may only formulate universal laws; it should not pronounce any judgment on different ends.

### REFLECTIONS ON THE QUESTION OF DEFINITION

*Merits of Marshall's definition* To Marshall goes the credit of having stressed many important characteristics of our course of study—that man and his welfare are the primary concern of the economist, that economic activity consists in producing, exchanging and using wealth, that the economist is concerned with the social implications of the individual and group actions and that the study is to proceed on scientific lines and not strictly with reference to immediate problems. The occurrence of the phrase 'material requisites of well being' in his definition is however, unfortunate. His own definition of wealth would include goods as well as services in that category. If we were to replace 'material requisites of well being' by the term 'wealth' and thus define economic activity as individual and social action which is concerned with the production and use of wealth, there is little in Marshall's definition with which a large majority of economists would not agree.

*Merits of Robbins' definition* Robbins deserves credit for focussing attention on the allocative aspect of economic activity. Economic problems must be distinguished from technical problems. A technical problem arises when a given thing is to be produced and a choice is to be made from among different methods by which it can be produced. An economic problem arises when we have a number of ends and a number of means (scarce though) and the latter have to be distributed among the various ends. A technical problem arises when there are many means and one end while an economic problem arises when there are many means and many ends.

*Criticism of Robbins' definition* But Robbins' definition has its shortcomings. There are many questions which cannot by any strenuous of imagination be classed as economic problems and yet, on Robbins' definition they have a claim to be so considered. No doubt, the division of time between work and leisure has economic implications. But once a person has decided this, he has to further distribute his leisure time between going for a walk, playing with children, prayers, and attending political and other meetings, etc. etc. Here is scarce time being allocated among various activities and yet there are no economic implications of it. Secondly, Robbins would exclude from economic discussion problems which are universally accepted topics of economic interest but which do not conform to the test of scarcity of means. Dr V K R. V. Rao has pointed out that, on Robbins' definition, we accept the ideal of avoiding wastes by using the minimum of means. This is correct so far as material resources are concerned. But man is also a means in production.

In his case we have often to face a different kind of problem, the problem of unemployment. The problem of unemployment is of course not the problem of scarcity; it is just the reverse of it.

There is one last point. Economic problem, according to Robbins, exists when there is scarcity and a choice has to be made. He tells us that exchange economy is only one of the different kinds of economies where economic problems exist. We agree with him that economic problems face Robinson Crusoe. They also exist in a socialist society of the kind where exchange is forbidden, the dictator using everybody as he likes and giving everybody what he likes. But in these two kinds of economies the economist has no job. It is only in an exchange economy that problems of prices, exchange, employment and tariffs, etc., arise. Existence of economic problems does not mean that there must be a science of Economics as well. A science of Economics is required only when economic problems assume social significance and actions of one group affect other groups. Economics studies the social aspects of individual and group actions in earning their living.

*Conclusion.* Economics is one of the social sciences which have as their aim the study of social relations as well as the implications of such relations. The study of Economics must throw light on how economic activity influences "the complex totality of relations between man and man which make up what we call society". We, therefore, conclude that Economics deals with the social implications of activity of mankind in relation to production, exchange and use of wealth.

### THE ROLE OF ECONOMIST

*Description and analysis.* There are three possible functions which the economist may assign to himself. First is the description and analysis of economic life. The gigantic machine of the existing economic system has to be studied and its working explained. But it is just not enough to describe. Its inner structure has to be exhibited. Relations of interdependence and causality between its various parts have to be brought out. Thus the economist has to search for uniformities in the administration of scarce means for the production of wealth and thence formulate generalisations or laws.

*Forecasts.* Secondly, the economist may anticipate future economic problems and thus enable the statesman to be forewarned, and, if possible, forearmed. In a period of rising prices and increasing employment, for instance, the economist ought not to devote his entire attention to the problems of boom and inflation; he should also think of what is likely to happen when inflationary forces have worked themselves out. It is said that the economists have fared poor in forecasting economic events and that they can perform only *post-mortem* operations. That is probably too true. But that would be a plea not against prognostication into the future but against ill-equipped economists. The economist has to improve his equipment. He

has to study more and go deeper into things so that he can forecast surely correctly

*Suggestion of policies* The question of the third function lands us into the domain of controversy. Should the economist apply his knowledge to practical problems and suggest policies? Many economists hold that Economics is a positive science which explains and forecasts but which does not make any recommendations. The economist, according to these writers is not to uphold or condemn. His findings may throw light on practical issues but he does not plan out his analysis with direct reference to such issues. In matters of policy, his role is that of a torch bearer. He exposes the results which are likely to follow if certain policies are adopted. Not that he makes a choice for the statesman, he only helps him to make his choice with eyes open and with a consciousness of what he is out for.

Let us see in what sense it is correct to say that the economist is not to pronounce any judgments. If in upholding or condemning, moral standards are to be applied the economist is not the person to do it. Among wild races daggars may be a necessity. Then the economist will take the want for daggars given and study it. Similarly if a rich nation behaves in night clubs it is not for the economist to tell that such a life is destructive of character. Nor does the economist, as economist praise or decry the forms of government. Questions like democracy *versus* dictatorship or confederation *versus* federation do not belong to his field. He takes the political framework as well as moral standards is given.

*Criteria of value judgment* The economist has his own criteria of value judgment. The objective is to maximise economic welfare. Economic welfare refers to satisfactions which members of a community get from the use of goods and services which become available to them. The larger the aggregate of these satisfactions, the larger is welfare. Economic welfare is thus constituted of satisfactions which are difficult to measure directly. Indices of welfare can, however, be found in a number of factors.

First is the size of the community's earning per year, i.e. annual production. The larger the size of annual production, the higher is economic welfare. Human as well as material resources of the country must be harnessed towards producing maximum wealth. It must be noted that this does not necessarily mean the use of all the resources. For instance, land may be rather too much for the workers available. Maximum production does not always imply maximum use of resources. It means the best use of resources. Policies and practices which increase production by better utilisation of resources are approved by the economist. Those which reduce production are disapproved.

We have pointed out above that we have to make the best of given resources. But as, following Dr V K R V Rao, we have already said, economising may not be welcome in respect of

man-power at a time when unemployment is threatening. Machines may be replaced by men even though the total output or output per man or output per unit of cost diminishes. Unemployment causes demoralisation and degradation. As the ultimate purpose is the uplift of man, maximum employment comes to be an end in itself. Maximum employment may be taken as a constituent of economic welfare though, strictly speaking, it does not conform to the definition of economic welfare given above.

The last factor is the manner in which wealth produced is distributed among different people in the country. Here an appeal is made to social justice. It is said that ends of social justice are not served if the distribution of incomes and opportunities is so uneven that some have enough for their dogs while others do not have enough for their children. On the other hand, none has ever suggested that everybody should get the same income. Sizes of families and requirements of professions and positions being ~~with~~ <sup>less</sup> rent, equal incomes will mean unequal distribution. Some differences must remain, but it is not possible to define exactly what differences may be allowed so that the distribution is ideal and ends of justice are squarely met. All that can be laid down is a broad criterion that inequalities in incomes and opportunities are, as far as possible, to be reduced. Economic policies, in the words of Planning Commission of India, "must aim both at utilising more effectively the resources, human and material, available to the community so as to obtain from them a large output of goods and services, and also at reducing inequalities of income, wealth and opportunity."<sup>6</sup>

From our discussion the following conclusions emerge. Economic policies are to be judged by their effects on production, employment, and distribution of incomes. All these ends are not always compatible. For instance, more employment may mean less production. But the human element must predominate. The economist will uphold those policies which satisfy these criteria, taken together, the most. It must, however, be noted that while the economist does appraise the values of policies, he is not the person to apply those policies. That is the job of those who handle the reins of government.

We have mentioned earlier that Robbins has objected to allowing a place to the concept of welfare in the field of economic study. He points out that Economics studies about production of things like liquors which in no way promote economic welfare. There are, however, two ways in which use of liquors influences welfare. First, as welfare is constituted of satisfactions, use of liquors increases the present welfare of those who consume them and get satisfaction from their consumption. Secondly, use of liquors, at least beyond a limit, reduces efficiency, and thus reduces people's power to produce wealth. While studying the factors which increase production and welfare, we must also study the factors which reduce them. Even

otherwise, there is an inconsistency in Robbins' stand. His own definition of Economics implies that the question of welfare is an integral part of it. Scarce means have to be economised both by individuals as well as society. That means a rational choice is to be made. And rational choice is nothing different from utilising means in such a manner that maximum satisfaction results. If maximum satisfaction is not realised, then the means are not being economised, or, the choice is not rational. It is this maximum satisfaction which is welfare in Economics. This is a satisfaction in relation-to-cost approach. Choice which produces maximum satisfaction with given means or produces a given amount of satisfaction from least resources is rational.

It may be objected that in the matter of suggestion of policies the economist proves only a jink of all trades. Economic activity of a country is constituted of its agriculture, industry, trade, banking, etc. A banker is obviously in a better position than an economist to gauge the effects of a given policy on banking. Similarly specialists in agriculture, commerce and industry are better equipped for advice on the repercussions of a policy in their respective spheres. Where does then it may be asked, the economist come in? The answer is that the specialists in the different wings of economic life have a sectional approach. If the effects of a policy on banking are favourable the banker will acclaim it; otherwise he will decry it. Similarly with other specialists. The economist's approach to different policies is national. He judges the repercussions of a policy on the various wings of economic life weighs the merits and demerits, and then says whether it will promote or retard economic welfare of the community as a whole.

#### THE PURPOSE OF STUDY

*Three Branches of Economics.* The economist is to suggest policies which will promote welfare by increasing incomes, employment, and efficiency and by reducing distributional inequalities. Analysis of actual problems and suggestion of policies for practical application is Applied Economics. There are two more branches of economic studies. These are Descriptive Economics and Theoretic or Pure Economics. Descriptive Economics studies the economic framework of the country as it is and as it has developed. In Pure Economics we study interrelations between various economic phenomena as well as their causes and effects and arrive at generalisations. The ultimate purpose of all economic studies is to help economic framework being so engineered that it produces the best results. Thus, both Descriptive and Pure Economics are meant to subserve Applied Economics.

We are in this book concerned with the Theory of Economics, the purpose of which is to make what has been called 'a box of tools'. Like every theoretical study, Theoretic Economics aims at formulating laws regarding the phenomena it undertakes to study. It enunciates general principles. Links between causes and effects are traced and thence generalisations or laws are arrived at.

were in different stages of economic development and also differed in many other respects.

Some natural laws are also relevant to economic study. Land left to itself for some time recup rates its health. Continued cultivation of land under the same crop leads to a gradual deterioration of fertility. The economist must be aware of such laws of nature. Similarly, the famous law of diminishing returns which occupies a very important place in economic analysis is a physical law.

The student of Economics must also take cognizance of some axiomatic laws and seek their aid in his analysis. The most important economic axiom is that men have wants which are numberless. An axiom which occasionally comes handy to the economist is that the productive capacity of a limited quantity of an instrument of production cannot be unlimited. Another instance of an economic axiom is that a labourer cannot put in his best if the climate is extremely hot or extremely cold.

Some of the natural sciences have reached such a stage of advancement that it is possible to lay down very precise and exact laws. A student of Chemistry can tell us with absolute certainty that one atom of oxygen and two atoms of hydrogen will produce one molecule of water. There are however other natural sciences, like Meteorology, where the progress made is not as much. A meteorologist can never be one hundred per cent certain about his calculations because there is a possibility of disturbance from many unforeseen factors. His forecasts must of necessity, be couched in the language of probabilities. Economics also falls in the category of sciences of probabilities. There being a multiplicity of factors involved, the very nature of the subject demands that its student speaks in terms of probabilities. At best the student of Economics can indicate the direction of expected change it lies far beyond his power to indicate the magnitude of the change. He would of course wish that he could formulate as precise laws as a student of Chemistry or Astronomy or Physics can. There is nothing however, in this imprecision to discourage him from the study of the subject. There are many such imprecise sciences which are rendering a useful service to mankind. Take, for instance the science of medicine. A physician may not be able to say whether a given medicine would prove efficacious, or precisely how long it would take to cure the patient. We do not because of that, give up the study and use of medical science. Quite similarly in the economic field, a malady may prove too chronic for the suggested remedy, or, the effect produced may not come up to expectations, yet so long as we know the direction in which it would pull it is not inadvisable to make use of it.

*Application of economic laws.* Economic laws, which result from the study of economic theory, constitute the economist's "box of tools". These tools are to be used with care because of their hypothetical character. In Applied Economics they prove useful in various ways. They are like the basic mathematical formulae (less precise,

though) which are of assistance at many steps in gauging repercussions of policies. We can know about at least some factors as to in which direction they will throw their weight.

Moreover, these laws are of great assistance in the analysis of complex problems with which the applied economist is concerned. To illustrate it, we may take the case of food exports from India in the early 'thirties'. It was held by some that this fact indicated that the country produced more food than her people could consume and the surplus was exported. Only those who had a clear grasp of economic theory, cou'd realise that demand is always at a price. When people did not purchase more food in a country of under-nourished people, it only meant that the price was too high for their capacity to buy, or, their purchasing power was low. Inference of disease from the symptoms can be correctly made only by those who know the basic principles of their science.

Lastly, a knowledge of economic principles, like that of the principles of any social science, is helpful in avoiding pursuit of incompatible ends. We cannot, for instance, fix high minimum wages and also expect employment to stand at a high level. Cheap money and lower prices, or low wages and high efficiency cannot go together. An interesting case of confused thinking regarding compatibility of ends is found in what has been called 'revenue argument' for protection. It is held that high duties give protection to the industry and also bring high revenue to the government. Evidently, protection is effective only when imports are small in which case revenue earned by the government is not large. The two ends of protection and high revenue are thus incompatible. We can aim at either the one or the other..

## CHAPTER II

### THE PROCEDURE

#### THE QUESTION OF METHOD

There are three possible methods of procedure available to the student of Economics for arriving at generalisations. These three methods may, for convenience, be called the statistical method, the method of controlled experiments, and the deductive method.

*Statistical method* In the statistical method the procedure is to dig into historical records and find out how various economic interests—banks, industries, agriculture, etc.—responded to different changes. Did, for example, loans advanced by the banking institutions increase or decrease when the Central Bank of the country raised its discount rate? By making a number of such studies we might be able to come to some generalisations which help us to lay down policies or to make predictions about the future. A moment's reflection will, however, show that absolute reliance on this method is fraught with dangers. As already mentioned, economic phenomena are complex and are determined by a large number of variables. Consequently, it is difficult, nay, impossible, to name two situations which are entirely similar. As we study the events of the past, we might find the results of given policies different in different cases and hence no generalisations may be possible. If at all we find some similarity in cases studied and thus arrive at some general rules, we might find these rules bearing invalidity when tested on situations that arise afterwards. To take the example quoted above, the Central Bank might have raised its rate of discount thrice (say during the war, in some more or less normal year, and during a period of high planned activity) and the changes in loans advanced by banking institutions may have been different in the three cases. The student would then be at a loss to draw any inference. Thus statistical method cannot be very helpful in economic studies because of the multiplicity of factors involved and a great variety in situations.

*Method of controlled experiments* Akin to the statistical method is the method of controlled experiments. This method is extremely suitable for a science like Physics where the apparatus consists of mute, lifeless articles which can easily be stored in an almirah and taken out and used at will. Not so in Economics. The material to be handled here consists of human beings and, at that, groups of them. The economist has no right to encroach upon their freedom. It is almost impossible to bring together a homogeneous group of them, say the buyers in a market, and ask them what quantities they would purchase at different prices. Even if we could bring them together, we cannot compel them to speak out their minds. Sometimes they themselves cannot say how much they would purchase at a given price because of the possibility of haggling. Lastly, even if we could

bring our apparatus perfectly "under orders", out observations may be illusory. Does not every day observation lead us to the wrong conclusion that the earth revolves round the Sun? For all these reasons, controlled experiments are more or less ruled out in economic studies.

*Deductive method.* Deductive method is the method mostly made use of in the field of economic theory. It may be defined as the process of reasoning from one fundamental to another. The procedure in the deductive method involves evolving a simplified model of the situation which is desired to be studied. It is clipped of its non-essential characteristics. The model is comparable to a geographical map wherein every house or tree is not shown but essential of shape and boundary are reproduced. The fundamentals, which serve as a lever to jump, may either be postulates or premises. Postulates are truths which do not need to be proved; they have only to be stated. For instance, that men have wants, is a postulate. Premises are the propositions which are assumed to be true. Strictly speaking, Pure Economics may involve reasoning on any assumptions. For instance, we may study conditions of economic equilibrium on the unrealistic assumption that every producer desires to earn a fixed amount of profit. Our interest, however, lies in the world as we know it. We desire our conclusions to have some value and for that reason our endeavour is that the premises conform to observations as far as possible. Stating the postulates or premises is the second step, just as evolving the model is the first step. Finally, conclusions, which flow from postulates and premises in respect of the model, are inferred and stated.

Two illustrations may clarify what is meant. Suppose the problem is to find out the equilibrium size of a firm. We assume a model firm, a firm satisfying certain conditions—that it produces only one commodity, and that for producing an output it employs the most efficient methods that it can lay hands on. Then we lay down the premises that the aim of the producer is to maximise profit. Size, giving maximum profit, is the equilibrium size. The problem is solved by finding the conditions which will make profit the highest.

The other is a fine illustration provided by Marshall's treatment of market price. He takes a corn market where there is a given stock and perfect competition. This is the model. Three premises are laid down : First; amount demanded is higher at a lower price and vice versa. Second, amount offered for sale is higher at a higher price and vice versa. Third, equilibrium is reached when the net result of influencing factors is nil. On the strength of these premises the conclusion is drawn that market will close with a price at which amount demanded equals amount supplied.

Much criticism has been levelled against the use of deductive d. It is said that the laws which are based on a few postulates may be universal not inevitable. Theoretically we can enunciate because they are essentially relative. Practically they are

useless because they do not help to lay down a uniform code of economic policies. This criticism is, however, unjust. Whoever can deny the relativity of economic laws? We have already stressed that most of the economic laws are hypothetical. If a scientist arrives at some conclusions on the basis of some assumptions, and in the application of the conclusions forgets about the assumptions, the fault is purely his and not of the deductive method. Similarly, if the deductive reasoning is carelessly or indifferently applied, the method does not come in to blame. For the wrong use of a tool is not the tool but the craftsman is the real culprit. We must clearly distinguish between the errors which may be committed by defective reasoning and the place which correct deduction should occupy in the field of a scientific enquiry.

*Conclusion* Though the method of deduction is the method mainly followed, yet it does not exclude the use of other methods. The validity of the theories developed with its help are repeatedly tested against experience. This testing, of course, encounters all those difficulties which have been enumerated in the discussion of the statistical method. Repeated attempts nevertheless, help to clarify doubts. Thus, the economist like all scientists, must use all the different methods of study which are available to a scientist. None of these methods is superior in its own right. That which serves best is the best.

### ✓ STATICS AND DYNAMICS

*Economic statics* The terms statics and dynamics have been imported into Economics from Physics but the meanings attached to them here are different. Statics of Physics deals with situations in which there is no movement. Economic statics, on the other hand, deals with situations in which there is movement but no change. In such situations, productive process goes on. Goods continue to be produced day in and day out, but there is no change because the fundamental conditions are fixed.

What are these fundamental conditions which are assumed to be fixed? According to classical economists a stationary state is characterised by constancy of population and capital. When these two factors are given wages and profits will also not change. J. B. Clark mentions five factors, viz., population, capital, methods of production, forms of individual establishment, and wants of the people.<sup>1</sup> In other words, the conditions on which the annual output of goods and the price level depends are given. We may sum up the fundamental conditions of a stationary state under three heads:

✓ 1. *Productive resources* This implies that population and capital do not change. Of course, the quantity of known natural

<sup>1</sup> An important difference between the classical view and Clarkian view is that while according to the former constancy of the factors mentioned is the result of equilibrating forces according to Clark constancy is the condition of equilibrium. Cf. L. Robbins, Concepts of Stationary Equilibrium. *The Economic Journal*, June 1930, p. 204.

resources is also given. As the quantity of capital is assumed as fixed, the quality of labour and natural resources cannot change. It may also be pointed out that fixity of capital implies that there is no net saving.

✓ 2. *Knowledge and technique.* Under this head fall the methods of production and forms of individual establishment mentioned by J. B. Clark. Methods of production and productive resources being given, it is only a given size of the output which can be produced.

✓ 3. *Tastes of consumers.* We have already assumed that size of the population is given. If tastes are also given, the character of demand does not change. In other words, quantities of commodities which would be demanded at various prices are given data.

Given the above three factors, there is one size and kind of aggregate output at which equilibrium will be established. The position of equilibrium will be such that, with given knowledge, the given resources are adjusted to the demand of the people. If there is disequilibrium, that is, if distribution of resources is out of adjustment with requirements there will be a movement towards adjustment. Once adjustment is achieved, the same distribution of resources is sought to be repeated. There may, however, be disturbances on account of failure of rains and the like. Static analysis applies equally to equilibrium and movements around it. Fluctuations are thus permissible in a stationary state. Study of fluctuations falls within the field of static analysis.

✓ *Comparative Statics.* Suppose there is a change in the fundamental conditions. The given data change. There will now be a new position of equilibrium, a different output and a different price level. And it is often of interest to compare the two positions of equilibrium. There are two sets of data. What will be the position of equilibrium with either set of data can be determined by methods of static analysis. Tools of static analysis can, therefore, be applied to analyse and compare the two situations of equilibrium. Such a study is called comparative statics.

Thus, comparative statics is a branch to which methods of economic statics are applicable. Also, it is obvious that every change does not fall in the field of economic dynamics. Fluctuations and once-over changes lend themselves to static analysis.

✓ *Economic Dynamics.* Problems arising from continuing changes belong to economic dynamics. We know that in the real world population and tastes are changing. Capital is also increasing. And new inventions are coming up. How these changes influence the output, prices, and incomes, is a study for economic dynamics. The difference may be clearly noted. It is not a case of once-over change in the fundamental factors. It is a case of continuing changes.

Economic dynamics studies effects of different rates and directions of changes in the fundamental factors.

Two examples may be taken. One is the case of saving. Saving is really a dynamic factor. With saving investment increases. This leads to an increase in production and employment. Incomes rise and then saving itself also increases. Thus saving sets into motion an essentially dynamic process. The second example is the study by the classical economists of effects of economic progress on distribution of wealth. The two dynamic changes are increase in population and capital. As a consequence of these, profits fall and wages rise. A point comes when profits become zero and wages fixed. Then there is no new capital, nor an increase in population. This is the stationary state.

Theory of economic dynamics has not yet been developed. In many cases where writers claimed that their studies were dynamic, they, in fact, did not go further than comparative statics. This was the case with Marshall, for instance. In recent years some attempts have been made by writers like Kalecki, Tinbergen and Mrs. Robinson to evolve a theory of economic dynamics. At best however, the theory is yet in its infancy.

#### ✓ MACRO-ECONOMICS AND MICRO-ECONOMICS

Measurements A distinction may be made between macro-economics and micro-economics. In the economic system of a country we have to reckon with units of various kinds. There are individual consumers, industries, firms and commodities. Study of problems relating to these individual units constitutes micro-economics. Consideration of factors on which costs, efficiency and equilibrium of individual firms and individual industries depend, are included in this. Similarly, determination of prices of particular commodities, of wages of particular groups, etc., are problems of micro-economics. When, on the other hand, we deal with questions regarding aggregates in respect of the country as a whole, the problems belong to the field of macro-economics. Here we consider problems concerning general level of prices, aggregate demand and output of all goods taken together, aggregates of investment, incomes, savings and expenditure, aggregate employment, etc., etc. These aggregates are clearly defined and their mutual relationships and interactions are studied.

✓ Interrelation between the two Micro-economic studies are bound to throw light on macro-economic problems. For example, a study of factors on which efficiency of individual firms depends will help to determine how the efficiency of the whole economic system can be improved. Application of the conclusions of micro-economic studies to macro-economic problems has, however, to be done with caution. What is true of an individual may not be true of the system as a whole. An individual becomes richer if he finds a few currencies, notes, but no country can become richer just by printing more notes. Similarly, in a given period an individual might spend more or less money than he receives, but the total money spent by all must always equal total money received by all—it can neither be more nor less.

Micro-economic studies are, nevertheless, helpful in comprehension of macro-economic problems. Nor can we, on the other hand, have a clear grasp of the implications and causes of individual decisions without reference to the aggregate situation. For instance, individual merchants increase their stocks when aggregate employment, demand, and prices are rising and vice versa. Similarly, how a person would spend his income depends on the prices of various goods which, in their turn, depend on how others are spending their incomes.

An aggregate tendency may not influence different sectors of economy similarly. A general rise in incomes, for instance, may induce some earners to substitute their bicycles by cars. There will then be an increased demand for cars but a reduced demand for bicycles. The two industries are quite dissimilarly affected. Similarly, an increase in aggregate demand, which leads to expansion of production, may confront some firms with increasing costs and others with falling costs.

The purpose of economic study is to trace the factors on which the efficiency of the whole economic system depends. As pointed out above, it does depend to a great extent on how individual firms, industries, consumers, and investors acquit themselves. The economist has, therefore, to study both micro-as well as macro-economic problems. The two studies are complementary to each other rather than the alternative methods of study.

#### MATHEMATICS AND ECONOMICS

*Economics is a mathematical science.* What part do we assign to the use of Mathematics in economic analysis? An enquiry, the purpose of which is to find out merely whether a thing will happen or not relates purely to the domain of logic. If, however, the enquiry seeks to find out whether a thing is more or less, quantitative notions enter and various branches of Mathematics can be employed with advantage. Economics belongs to this latter category.

*Use of Algebra and Geometry.* Algebraic symbols are frequently employed in economic analysis because they are helpful in writing down quickly and exactly. The use of geometry is also growing. Many things, otherwise complex to comprehend, can more easily be analysed with its aid.

*The use of Graphs.* The most widely employed mathematical technique is that of graphs. Presentation of relation between two variables by a curve is in many ways preferable to lengthy, less comprehensible, tables. It saves time and facilitates grasp of the facts as well as their interpretation. We must, however, be conscious of the limitations of this technique. Curves, by themselves, do not prove things; they only depict them better. Moreover, a curve is a continuous line. It assumes perfect divisibility of variables which sometimes do not exist. Knives are indivisible units; yet their demand curve would be a continuous line. Lastly, a curve is only a two-dimensioned

picture and hence only two variables can be represented. If other variables are involved, they have to be assumed as fixed. In the further application of conclusions drawn with the aid of curves, this fact of fixity of other factors should never be forgotten.

*Use of other branches of Mathematics* Economics, in its analysis, takes account of small increments and their repercussions. In such cases not only has the aid of mathematical symbols to be taken, but also differential calculus comes handy. In recent years, mathematical economists and econometricians have been making use of integral calculus and even abstract algebra.

*The guiding principle* The use of mathematical methods is justifiable only so far as it is helpful to the student of the science. Use of too many symbols is often very irritating. Some specialists delight in needlessly using higher Mathematics only to make the approach more circuitous and less comprehensible. After all why develop the science into an unintelligible thicket of complex variables and mathematical symbols. Guiding principle for the economists should be to use Mathematics only to the extent that it facilitates comprehension, analysis and interpretation of facts.

### BASIC ASSUMPTIONS

*Rational behaviour* In this world, wide and large, can be found people with various attitudes towards life and things. There are intelligent men, rational men, criminals, idiosyncrats, perverts and dunces. We must define the attitude which we expect the men we study—our theme—to adopt. In the first place our study starts on the assumption that men's behaviour is rational. It does not necessarily mean very intelligent action. It rules out idiosyncrasies and perverseness, of course. We assume on their part rationality of the kind that if a person prefers  $x$  to  $y$  then for the same price, he will purchase  $x$  rather than  $y$ . Or, for instance, if a consumer asks for a pen, he really wants a pen and not a packet of cigarettes. Such an assumption is quite indispensable for an inquiry in any social science.

*Preference criterion* Validity of what may be called "preference criterion" is also assumed. If an individual prefers one commodity (or service)  $x$  to  $y$  we take this preference to mean that  $x$  will give him more satisfaction than  $y$ . Economic good is thus preferred and economic policy which gives him the preferred good would be recommended. Similarly if the individual prefers work  $A$  to  $B$ , we understand that work  $A$  causes him less discomfort than work  $B$ . The economist, would appraise the policy which gives him work  $A$  in preference to the  $\text{to } B$ . It must be noted that "preference criterion" implies that individuals have full knowledge of their own wants and preferences.

*Law-abiding citizens* Another assumption is in respect of behaviour within the legal framework. The activities of robbers and dacoits may be directed towards "earning a living", yet the economist has

little interest in them since their activities are unlawful. The economist, similarly, does not analyse the activities of smugglers and black-marketeers. He may desire the elimination of such activities from the economic world. But that he does just as any other honest citizens would do. An obvious corollary of this assumption is that there is an effective political government.

*Economic man.* An important assumption is that of an "economic man" for which economists have been so harshly criticised.<sup>2</sup> It implies that every person tries to make the best of the situation in terms of economic advantage. As a consumer his endeavour is to get maximum possible satisfaction from his income. He spends his money on those things which give him more satisfaction in preference to those things which give him less satisfaction. As a producer he will try to tune his output to such a level which, with the cost-price structure that he anticipates, would yield maximum profit. As a wage earner he tries his best to secure high wages and as an employer he would like to pay the minimum. Similarly, as a lender he would bargain for the highest rate of interest and as a borrower for the lowest. This does not mean that the economist is unaware of, or denies the existence of other motives shaping behaviour. He isolates only the economic motive for various reasons. First, for his deductive method of study just as he requires a simplified model of the situation, similarly he needs to clearly define his premises. Secondly, this motive—the motive of maximum benefit or economic motive—is the steadiest of all as also the most common. Thirdly, it helps to draw definite conclusions. Lastly, even if we try to take cognizance of all possible motives influencing economic action, it would be almost impossible to draw a comprehensive list of them and much more difficult to assess their influence. We mostly argue, therefore, on the assumption of monetary benefit being the sole consideration.

Yet we do have sometimes to reckon even non-economic motives which have important bearing on economic decisions. For instance, we do take into account the fact that people prefer one store to the other for reasons of nearness or reputation of the former. Similarly, a worker may accept lower wages in one occupation rather than higher wages in another because the former is more agreeable to his taste or because it carries with it better social status. Economic motive is thus our main criterion in analysis though along with it sometimes some important non-economic motives are also taken cognizance of.

*Capitalist society.* Lastly, we assume a capitalist system. Not that no economic principles, whatsoever, can be laid down for a controlled economy. There are, however, important reasons why we limit our study to a capitalist system. First, it is the traditional model of study ever since Adam Smith wrote his "Wealth of Nations." Moreover, the economies of many modern countries conform to the ..capitalist model. Another important consideration is that economic

<sup>2</sup> Some writers like Prof. Oscar Lange prefer to call this the assumption of economic rationality.

forces are allowed a free play in this system and hence it is easier for the economist to analyse and generalise. It is probably for this reason that economic theory has attained a much greater advancement in this field than in any other.

### CAPITALIST SYSTEM

A word about the capitalist system would be pertinent here. Broadly speaking, it is a system characterised by economic liberty. More concretely, citizens have freedom in their actions as owners, producers, employers, workers, sellers and consumers. Technically, however, it is convenient to say that a capitalist economy is, on the one hand, a free-enterprise economy and, on the other, a market economy.

*Free-enterprise economy* A free-enterprise economy is one in which there is freedom of ownership. Implications of freedom of ownership can best be understood by contrast. It is said that under socialism, there is no private property. Does it imply that even shirts and shoes are commonly owned? Of course not! It only means that things which are instrumental in production of wealth, called factors of production, in economics are the property not of individuals or private firms, but of the State. Land, capital and even the labour of the workers is the property of the State. This is the only difference. Freedom of ownership in capitalism, therefore, means that the factors of production are owned by individuals and private firms.

There is no country in the world where all centres of production (*i.e.*, factories and farms, etc., which use factors of production) are owned by the State. If it were so, we would have a case of pure socialist economy. Nor, on the other hand, have we any example of pure private economy where all centres of production are privately owned. Economies have come to be called socialist economies or free-enterprise economies according as State ownership predominates or private ownership.

*Market economy* Trade serves as a guide in the exercise of economic liberty. People, as consumers express their preferences through their price offers. Products know preferences of their customers from market prices and adjust the production accordingly. Trade thus enables people to express and ascertain preferences. Hence it helps in the co-ordination of economic activity and in the allocation of resources to various industries. Alternative to trade is regulation by the State. According as economic activity is co-ordinated by trade or state regulation, the system is market economy or regulated economy.

Complete and comprehensive regulation by the State would prove oppressive, if not impossible. The State would have to determine for every citizen his occupation, hours of work, his income and the pattern of his consumption. Such a system would obviously be very rigid, riding rough shod over individual choices and preferences. Hence even planned economies rely on market mechanism for recruitment of labour and sale of products. On the other hand, a case

of co-ordination of economic activity solely by trade and entire absence of regulation by State cannot be found. Allocation of resources by trade discriminates in favour of the rich and hence ignores questions of equity and social justice. Some regulation, therefore, becomes necessary and this regulation, to the extent that it goes, restricts the economic liberty of the people. Taxes, for instance, reduce people's liberty to spend their own incomes. Labour laws, export-import restrictions, restriction on the purchase and use of poisons, drugs and intoxicants, etc., are further instances of such limitations. In our country, the government has a monopoly of certain businesses like railways. It also grants monopolies by licences and patent rights. Thus neither a pure market economy nor a pure planned economy is to be found in the real world. According as trade or regulation by State predominates, the system is described as market economy or regulated economy. Market economy, as we have already said, is the other feature of capitalist system.

Thus an economy, where private enterprise and trade predominate, is a capitalist economy. On the other hand, if socialism and State regulation predominate, it is a controlled economy. It must be noted that a system in which state ownership and state regulation are altogether non-existent is a pure capitalist economy.

There is one limitation on economic liberty which is inherent in the capitalist system itself. It may be called the limitation of capacity and capability. A producer is free to own as big a factory as he would provided he can command the requisite investment. Also, a man may take up any occupation but he must have some knowledge of the trade. And a consumer may purchase what he likes only if he has the requisite wherewithal for it. As these limitations are inherent in the situation, their existence is not considered as destructive of economic liberty.

## CHAPTER III

# SLOPE OF THE DEMAND CURVE—UTILITY ANALYSIS

### PROBLEMS OF DEMAND

*Macro economic and micro economic concepts of demand.* Since wants are the starting point of economic activity, they may also be taken as the starting point of economic analysis. We thus start with a consideration of the question of demand. The question of demand for goods is to be considered on micro-economic as well as macro-economic basis. Micro-economic study of demand relates to aggregate demand of all residents for all goods and services taken together. We may study the factors which determine the level of aggregate demand as also its relation with general level of employment, incomes, saving and investment. This we postpone to a later chapter.

Here in this and the three following chapters we take up micro-economic study of demand. Two problems deserve analysis. One is in respect of expenditure of income, that is, of the demand of an individual for various commodities. The other is regarding the demand for any single commodity in a market. In connection with the latter we study the relation between the price of a commodity and its amount demanded. This study is fundamental to finding out conditions of equilibrium in a market.

*Slope of Demand Curve.* As a rule amount demanded at different prices is different. A statement showing the amounts of a commodity demanded at various prices is known as its demand schedule. If we represent a demand schedule by graph, we get a demand curve. The problem before us is whether in a demand schedule higher prices are associated with larger or smaller quantities. In case larger amounts go with the higher prices the demand curve will slope upwards. On the other hand, if smaller amounts are purchased at higher prices the demand curve will slope downwards to the right. We have to determine the slope of the demand curve—whether it slopes upwards, or downwards, or runs parallel to either of the axes. Two methods have been adopted for the purpose, one being known as utility analysis and the other substitution analysis. In this chapter we treat of the former. In this analysis, utility and marginal utility are the fundamental concepts while the law of diminishing utility is the basic law.

### UTILITY

*Measuring Utility.* The term utility, as used in Economics, is correlative of desire, just as the term beauty is correlative of liking. When a person likes the look of a thing, it is said to be beautiful for him. Similarly, when a person desires a thing, it is said to have utility for him. A hungry man desires food because it satisfies his hunger. He, who wants to shave, desires a razor which will remove hair from

his chin, and he who is tired of life desires some poison which will help him join the Majority. For whatever reason a thing is desired, constitutes the source of utility. Utility may, therefore, be defined as the quality of a commodity which makes it an object of desire to the buyer. Utility is not a virtue inherent in a commodity. It arises out of men's requirement for it. No ethical or aesthetical considerations enter. A thing may be useful or harmful, desirable or undesirable, it possesses utility so far as it is desired. Utility does not signify desirability but desiredness, not usefulness but usableness.

What one person considers beautiful may not be so in the eyes of another person. Similar is the case with utility. It is a subjective concept. A thing, which is very keenly desired by one man, may be an object of disgust to another. What is one man's meat is another man's poison. What has high utility for *A* may have no utility at all for *B*. Desire is the result of tastes and requirements and these vary from person to person.

*Measurement of Utility.* Can we measure utility? The answer to this question would be a counter-question, *viz.*, can we measure desire? Now, obviously, desire is a state of mind and, hence, cannot be measured directly. An indirect measure of the extent of desire, however, does exist in the price which an individual is prepared to pay for the thing. If a person is prepared to pay two annas for an apple and not more than one anna for a banana, then his desire for an apple is twice as keen as that for a banana; hence utility of the former is twice that of the latter.

To compare the utilities of two different commodities to a single person by his maximum price-offers makes some sense. But to compare the utilities of a single commodity to two different persons by their respective maximum price-offers introduces complications. *A* may be richer than *B* and, though the keenness of his desire is less, he may offer a higher price. Higher offer in such a case does not bespeak higher utility of the commodity, but enough money to spare for it. Moreover, utility analysis sometimes speaks of utility of money, the exact connotation of which is difficult to understand because there is nothing which will measure utility of money.

In spite of these shortcomings, money is used as a measure of utility and inferences about the amount of utility are drawn from the maximum price-offers. Even in this state of things, the economist finds himself better placed than students of other social sciences because, after all, he does have a rod for measuring the strength of the motives involved while the latter do not have any. But he is also aware of its limitations and does not claim it to be as dependable a measure as, say, a meter which the physicist makes use of.

*Utility and satisfaction.* The relation between utility and satisfaction must be clearly understood. Utility is a consideration at the time of purchasing a commodity. Satisfaction, being the enjoyment derived from the use of it, arises from its actual consumption. Utility

exists even when the individual is not in a position to procure the commodity, but satisfaction does not come unless it is procured and used. Utility is thus not conditional upon capacity to purchase, while satisfaction is. Moreover, utility sometimes is no index of satisfaction. A thing may be desired very keenly, but, when actually used, may not prove what it was thought to be at the time of purchase. How many times has each one of us proved wrong in judging the quality of things at the time of purchase? It was because of these considerations that Marshall remarked, "If we could we should have two account to make up—one of desires, and the other of realised satisfactions!" But unfortunately satisfactions cannot be measured; only utility can be measured, though that is indirectly. With this, therefore, we have to assume a coherent relation between the two. The whole theory of demand is built on the assumption that the satisfaction expected of a commodity when acquiring it is equal to the actual satisfaction that it yields on consumption. In other words, it is assumed that utility and satisfaction are always directly proportional to each other. This assumption is implicit in the often repeated sentence that utility is the power of satisfying want.

The above assumption is made for reasons of convenience. And it does hold good in the case of a large number of purchases because most of the commodities we purchase are either standardised goods, or are purchased on the basis of experience of our own or of friends or advisers.

### MARGINAL UTILITY

Meaning Utility of a commodity to an individual, as we have seen, is measured by the maximum amount of money which he is prepared to offer for it. To be accurate, we must specify the amount of the commodity. For evidently, the individual will not offer the same money for all amounts. A person would be prepared to pay more for larger amounts than for smaller amounts. What he is prepared to pay for  $n$  and  $(n+1)$  units of a commodity are the respective measures of the utility of  $n$  units and  $n+1$  units. The difference between the two—total utility of  $n$  units minus total utility of  $n+1$  units—is marginal utility of  $n$  units to the individual. Marginal utility of a given amount of a commodity to an individual is the difference made to the total utility when a unit reduction is made in the amount of that commodity.

Sometimes marginal utility is defined as the utility of an additional unit. In this sense, marginal utility of  $n$  units is the difference between utilities of  $(n+1)$  and  $n$  units. As it has to be a matter of convention, even this definition may do, provided, once a definition is adopted it is stuck to. A marginal unit, nevertheless, in the sense of the "border unit", is contained in the amount itself and hence the preference for the definition given in the above paragraph. There is, however, little to choose between the two definitions and either of them proves a convenient tool in its own place.

*Is it the utility of nth unit? Can we say that marginal utility of n units is the utility of the nth unit? In a way 'yes', because marginal utility is the utility of the marginal unit and this unit is the marginal unit when the total number of units is n. But generally purchases are not made unit by unit and all units are exactly similar. If we purchase two mounds of wheat, we cannot say which one is the marginal. The fact is that no unit has a superior claim than any other to be ranked as the marginal unit. Any unit may be treated as the marginal unit. Hence it is always preferable to avoid the use of the terms 1st unit, 2nd unit . . . nth unit, etc., unless purchases are made unit by unit, or, for purposes of analysis it is convenient to speak in that manner.*

### LAW OF DIMINISHING UTILITY

*Marginal utility and amount.* We have pointed out above that utility of different amounts of a commodity is different. Similar is the case with marginal utility. Whenever, therefore, we speak of marginal utility, it must be done with reference to the amount. The law which formulates the relation between variations in the quantity of a commodity and variations in marginal utility is known as the law of diminishing marginal utility, though it should, to be exact, be called the law of diminishing marginal utility. This law can be traced back to the writings of Bentham, but William Stanley Jevons was the first person to show its bearing on the determination of value. In utility analysis, this law occupies the most important place.

*Utility and price.* A man purchases only those commodities which have utility for him. He is prepared to make payment for them out of his earning. Suppose a person is to decide whether he should purchase a pencil or not. Obviously, he would compare the utility of the pencil with the price he has to pay for it. If the utility is higher than the price, he would purchase it. If the utility is less, he would not. And if the utility and price are equal, he may or may not purchase it. We can, then, argue on the basis that if he purchases a pencil, its utility is higher than its price (or, is at least equal to it).

*The problem* We have pointed out above that goods, in actual practice, are seldom bought unit by unit. A number of units are purchased simultaneously. But let us, for the sake of convenience of argument, suppose that a person starts purchasing pencils one by one. As he proceeds, the number of pencils possessed by him increases. Will, as a result of it, marginal utility of pencils to him rise, fall, or remain constant? Let us see!

*Marginal utility cannot increase with amount.* As he purchases the first pencil it implies that the utility of this pencil is higher than its price. Now suppose that marginal utility increases, as he proceeds. In other words, the utility of an additional pencil is higher than utility of the pencil which he has already purchased.

As the utility of the first pencil is higher than the price, the utility of the second pencil would be still higher. He will, therefore, buy this second pencil also. The utility of one additional pencil would now be still higher. He would purchase that too. The more he goes on purchasing by assumption, the higher is the utility of an additional unit and, hence, he must buy more. In other words, once he starts purchasing pencils, he would continue purchasing them till his whole income is spent. He would not purchase anything else. The fact, that all of us purchase a number of commodities, proves that marginal utility of none of them increases as the quantity of it possessed by a person increases.

*It cannot decrease.* Now, if marginal utility were to remain constant as he purchases more and more his conduct would be similar to the one envisaged above. The utility of the first pencil is higher than the price and hence he purchases it. As the marginal utility remains constant, the utility of every additional pencil will be higher than the price. In this case also, once purchasing starts it ends only when the outlay on pencils equals total income of the individual. Only pencils would be purchased which, as we have already said, is contrary to experience.

*The law.* Hence, as a person purchases (or possesses) more and more of a commodity, its marginal utility can neither rise nor remain constant. The only thing that can happen is that marginal utility falls. This is the law of diminishing utility. This law says that the utility of a commodity depends on its quantity, but it is not proportional to the quantity. A unit of the same commodity carries more or less utility according as the individual already possesses a smaller or a larger amount of it. The larger the amount he already possesses, the smaller the utility derived from a unit addition to it. The law may formally be stated thus. As the amount of a commodity possessed by a person at any time increases, its marginal utility to him diminishes.

The reader must clearly note that the law of diminishing utility does not speak of the rate of decline of marginal utility. We cannot say whether marginal utility decreases fast or slow or even whether this decline is at a uniform or a varying rate.

*Explanation of the law.* We have established the law of diminishing utility on the basis of observation. What is the explanation of this tendency? Obviously, the explanation of why a person values some quantities more and other quantities less must be either physiological or psychological, either the pleasures and pains of the body or feeling of the mind. The possession and use of a commodity is a stimulus and the law of diminishing utility is the law of "the diminishing reaction to stimuli". As we have stressed again and again, the law of diminishing utility has formed the fundamental basis in demand analysis. It is undesirable that foundations of our theory should be in psycho-physiological principles.

Curve representation is preferred to space representation. Curves are easier to draw by free hand and marginal utilities of various amounts easier to read. Moreover, in the study of relations between different kinds of schedules, curves are easier to juxtapose. But, as pointed out in the first Chapter, the chief shortcoming of curve representation is that it assumes perfect divisibility of units.

### TOTAL UTILITY AND MARGINAL UTILITY

*Distinction.* Disjunction between total utility and marginal utility is of great significance. Jevons was the first writer to clearly bring out this distinction and this in his view was a very important discovery. In a way it was, because it supplied a key to Smith's famous paradox of value. Air and water may have higher total utility and yet they do not command any value as their marginal utility is zero.

Total utility refers to utility of the whole amount possessed or purchased while marginal utility is the difference in total utility if one unit less (or one unit more) were purchased. The following table brings out the distinction very clearly.

TABLE III a

No. of units purchased or possessed	Total utility	Marginal utility
1	15	15
2	28	13
3	38	10
4	44	6
5	44	0
6	42	-2

*The relation.* It may be noted that total utility can be found by summing up utilities of successive units, i.e., marginal utilities. Thus total utility of three units is 38 ( $15+13+10$ ). It may also be noted that the law of diminishing utility relates to marginal utility and not to total utility. As the amount increases, total utility also increases though at a diminishing rate. It is not the total utility but marginal utility which diminishes. Of course, when marginal utility has diminished to zero, total utility shall have reached its maximum. After that, if additional units are still pressed on the individual, marginal utility will be negative and total utility will progressively decline.

*Reading total utility from marginal utility curve.* We can find out total utility from the marginal utility curve also. This would be more easily understood if we first take space representation of marginal utility. In Fig. 3.3, total utility of three units is shown by the shaded area. If we join the outer corners of the rectangles, we get the marginal utility curve. Ignoring the small triangles which are thus formed (and which would become infinitely small as we narrow down the rectangles to straight lines), we find that

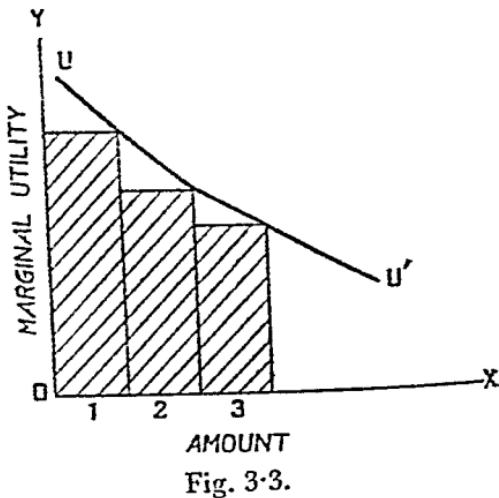


Fig. 3.3.

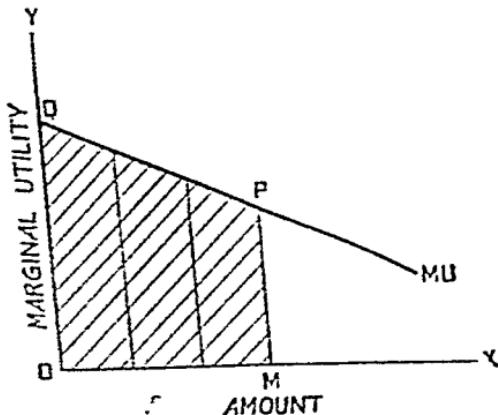


Fig. 3.4.

marginal utility, while total utility is given by the area  $OMPQ$ .

#### INTER-PERSONAL COMPARISONS OF UTILITY

*Marshall's position.* Utility and marginal utility are, we have decided, to be measured in terms of money. Money, representing general purchasing power as it does, is also a desired object; it has utility. But in what terms can we measure its utility, is not clear. Marshall does, however, speak of marginal utility of money being greater or smaller.

The law of diminishing utility is, also he tell us applicable to money, with the only difference that marginal utility of money does not become zero. The utility of a gift of five rupees to a person depends on whether he is rich or he is poor. Similarly, durability of a loss of five rupees also depends on how much money he has. With a larger amount in his possession a given gain or loss of money will have less significance for an individual.

Two simultaneous jumps are taken by Marshall. From the amounts of money possessed he jumps to incomes. The utility of a given increment in income depends on the level of income. An increment of five rupees would be more welcome to a person with an income of Rs. 50 per month than it would have been to him if his income were, say, Rs. 100 per month.

With the next jump the argument breaks. Instead of comparing the utility of a given increment to the same person at different levels of income he begins to compare the utility of such an increment to different persons with different levels of income. The clerk with £100 a year will walk to business in a much heavier rain than the clerk with £300 a year.<sup>2</sup> On the basis of this inter personal comparison of marginal utilities, conclusion is drawn that marginal utility of money income to a poor man is greater than the same to a rich man. Thus if a given amount of money income were transferred from the rich to the poor, gain to the latter will exceed the loss suffered by the former. Two conclusions are drawn. Rich ought to be taxed more heavily than the poor because taxing the rich involves less loss of utility, and hence a given tax will have caused the least burden. Secondly taxes collected should be spent for the benefit of the poor because such a transfer involves less loss and greater gain.

*Difficulties in Inter Personal Comparison.* This inter personal comparison of utility has been vehemently criticised in recent years. Marshall, in making such a comparison conveniently forgets that the law of diminishing utility is the law of a single want of a single person. It compares the marginal utilities of different amounts to the same person.

Let  $M$  be larger than  $N$ . From the law of diminishing utility we infer that marginal utility of  $M$  units of money to  $A$  is less than marginal utility of  $N$  units to  $A$ . Similarly, we may also infer that marginal utility of  $M$  units to  $B$  is less than marginal utility of  $N$  units to  $B$ . This, however, by no means implies that marginal utility of  $M$  units to  $A$  is less than marginal utility of  $N$  units to  $B$ . Nor does it in any manner imply that marginal utility of  $M$  units to  $B$  is less than that of  $N$  units to  $A$ .<sup>3</sup>

If we were to admit the possibility of inter personal comparisons of utility as suggested by Marshall, and hence inferred that marginal utility of money to the rich is lower than the same to the poor we, logically, accept that marginal utility of equal incomes is equal to

<sup>2</sup> If  $\alpha > \beta$  and  $\gamma > \theta$  it does not mean that  $\alpha > \beta$  or that  $\gamma > \theta$ .

different persons. That is in fact not so. Two persons may be drawing equal salaries. One of them may be bachelors and the other married. Or, one may have more children than the other. Or, it may be that customs of one's community are more expensive than those of the other's community. Similarly, one of them might have been brought up in a princely style and the other in a poor context. Equal incomes in such cases carry unequal utilities and hence marginal utility is different in the two cases.

Thus inter-personal comparisons of utility is a field where it is wrong to invoke the aid of the law of diminishing utility. And, even if the law could show that marginal utility of money to the rich is lower than that to the poor, there would still be no economic justification to reduce inequalities by taxation or otherwise. It is one thing to say that two things are unequal; it is another thing to say that they should be made equal. We may twist the law of diminishing utility to conclude the first, yet we cannot claim a right to recommend the second.

If the law of diminishing utility does not justify reduction in inequalities of wealth and incomes, in Economics there is no other law either which can do so. Hence the justification for reducing inequalities of wealth and incomes by taxation and other policies is found in humanitarian, social, or even political considerations (what we have called social justice). Economics may take such an end as given—supplied by social opinion or election manifesto of the party in power. But this is not an end based on any economic law.

### DIMINISHING UTILITY AND THE SLOPE OF THE DEMAND CURVE

*Price equals Marginal Utility.* An individual purchases a commodity because it has utility. But the purchase also involves a sacrifice in the form of price which he pays. The purchaser, it must be evident, goes on purchasing the commodity till price and the utility of an additional unit are equal. In other words, every individual stops his purchase at the point where final utility and price equal. This can be illustrated by Fig. 3.5. MU is a curve showing marginal utility for different units. The curve slopes downwards. The price in the market is  $OL$ . Five units are purchased so that the marginal utility of five units,  $PM$ , is equal to the

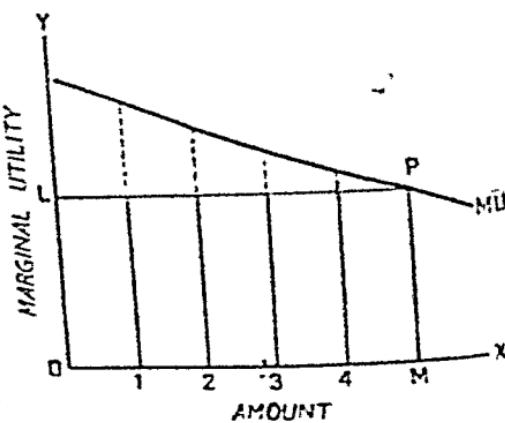


Fig. 3.5

price,  $OL$ . At the margin there is a balance. For all other units utility exceeds price.

*✓ Individual demand curve* When price is high, an individual will purchase an amount marginal utility of which is high. And, if the price is low, he will purchase an amount which carries low marginal utility. Our law of diminishing utility tells us that a small amount has high marginal utility while a large amount has low marginal utility. Obviously, then, when the price is high, our imaginary buyer will purchase a small amount. If the price falls, he will purchase a larger amount and if the price becomes higher, the amount purchased would be less. This can be shown with the help of a curve as under:

When the price is  $OA$ , the amount purchased will be  $AP$  (or  $OM_1$ ) because marginal utility of the amount  $AP$  is  $PM$  which equals  $QA$ . As the price rises to  $OB$ , the amount purchased contracts to  $BQ$  (or  $OM_2$ ) so that ( $QM_2$ ), the marginal utility of  $BQ$  equals the price  $OB$ . Similarly, when the price falls to  $OC$ , the amount purchased by the individual extends to  $CR$  (or  $OM_3$ ) which equilises marginal utility and price.

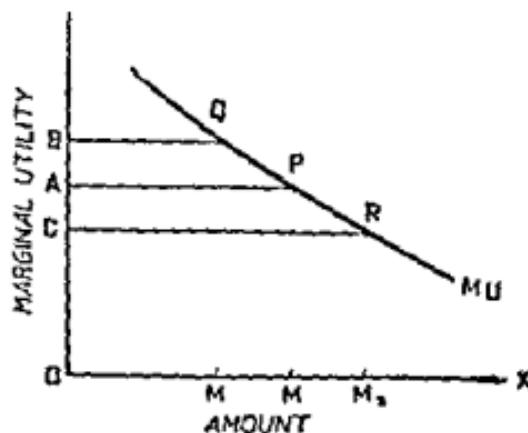


Fig. 36

*Market Demand Curve* Thus the higher the price, the smaller is the amount demanded by an individual. If we were to draw a table showing different amounts the individual would purchase at various prices we get the demand schedule of an individual. A part of a typical, though imaginary, demand schedule is given below:

TABLE III b

Price per Orange Annas	No. of Oranges which the individual would purchase
1	30
2	27
3	22
4	16
5	9
6	2

The total amount purchased at any price in the market is given by the aggregate of purchases of all the individuals in the

market. Hence aggregate of the demand schedules of all the individual buyers in the market will give the demand schedule of the market. To simplify, let us assume that there are only five possible buyers in the market. Call them *A*, *B*, *C*, *D*, and *E*. Let their individual demand schedules be as under:

TABLE III-c

Price per Orange (annas)	Number of Oranges purchased by					Total
	<i>A</i>	<i>B</i>	<i>C</i>	<i>D</i>	<i>E</i>	
1	30	12	13	7	18	80
2	27	9	8	6	13	63
3	22	5	4	4	11	46
4	16	3	..	3	8	30
5	9	..	..	2	6	17
6	2	..	..	..	4	6

From the sums of individual demands at various prices, we find that as the price rises, amount demanded contracts, and as the price falls amount demanded extends. Thus when the price is 4 annas per orange, total number of oranges purchased in the market is 30. When the price rises to 5 annas amount demanded contracts to 17. And if the price falls to 3 annas amount demanded extends to 46.

Thus in the market larger purchases are associated with lower prices and smaller purchases go with higher prices. If we were to indicate this fact (that is the, market demand schedule) by means of a curve, we shall find that the curve slopes downwards to the right.

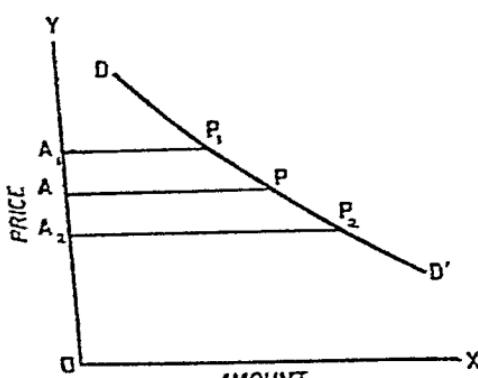


Fig. 3.7.

the price rises to  $OA_1$  amount demanded contracts to  $A_1P_1$  while if it falls to  $OA_2$  amount demanded extends to  $A_2P_2$ .

*Conclusion.* Thus from the law of diminishing utility we can arrive at the conclusion that every individual, in trying to equalise marginal utility and price, purchases larger amounts at lower prices and smaller amounts at higher prices. This fact we harness to define the shape of the demand curve in a market. A typical demand curve of a commodity in a market slopes downwards to the

## CHAPTER IV

### SLOPE OF THE DEMAND CURVE—ALTERNATIVE ANALYSIS

#### UTILITY ANALYSIS VERSUS SUBSTITUTION ANALYSIS

✓ *Defects in Utility Analysis* Utility analysis helps us to arrive at the conclusion that typical demand curve slopes down to the right. But there are defects in this analysis. Utility is correlative of desire, a psychological concept. Every time we want to know why one thing is valued higher than another, we have to appeal to the utilities of the two, that is, to the psychological attitude of the consumer. Similarly, as we have seen, the law of diminishing utility rests upon physio-psychological assumptions which are difficult to establish. Moreover, utility is conceived of as a measurable quantity, though it is not possible to say with certainty that the maximum price which a consumer is prepared to pay for a commodity does really or correctly measure utility. Also, utility of a given amount of a commodity is very often spoken of as if it were independent of the consumer's possession of other commodities. In fact, however, it is not so. Utility of a given amount of a commodity will decrease if the consumer's stock of its substitutes increases. Or, if the quantity of the commodity in question is already large in relation to the quantity possessed of its complement, its utility will increase if the quantity of its complement is increased. Utility analysis thus rests on an assumption of questionable validity. And even if those assumptions be correct, it is desirable to reduce the number of assumptions on the principle of "Economy of Hypotheses".

*Assumptions of Substitution Analysis* Substitution analysis attempts to avoid these defects. It rests upon simple and obvious assumptions, the main basis being the behaviour of the consumer. If a person has an orange which he prefers to spend on an orange rather than on a banana, we conclude that he prefers an orange to a banana. We need not peep behind this obvious fact and try to know why he prefers an orange to a banana, or to see whether he really enjoys the eating of an orange more than that of a banana. Nor do we need to know how much he prefers the orange. Quantitative considerations are not allowed in. The fact of preference is considered enough for this purpose.

*Cardinal and Ordinal Approaches* As we noted in the last Chapter, utility having been declared a measurable quantity, comparisons have been attempted between reductions in one case and additions in the other. It has, for instance, been said by the utility analysts that transfer of wealth from the rich to the poor results in a net gain of utility to the community as a whole. Substitution analysis makes no such attempt. The only circumstance in which it can draw inference is when there is a change on one front and no

change on other fronts. Thus if a consumer gets more oranges and all other things that he gets remain the same, he would be better off. But if he gets more oranges and less bananas, substitution analysis does not say whether he is better or worse off unless the consumer would say so. The difference between the two approaches is, to use the language of I.M.D. Little, that of cardinal and ordinal approaches. An analogy may make things clear. Imagine two points *A* and *B* on different heights on a mound. Ordinal approach will only say that *A* is higher than *B*. Cardinal approach will tell us how much it is higher. Now suppose *A* is moved down a little and *B* is moved up. Cardinal approach will endeavour to calculate whether the aggregate of their heights is more or less than before. Ordinal approach will refuse to make such an attempt. All that it would say is that if *A* moves down and *B* does not move up, the aggregate of their heights will be less. Utility analysis is cardinal in its approach while substitution analysis is ordinal.

*Indifference.* Preference of *A* to *B*, in substitution analysis, means only that the consumer would rather have *A* than *B*. When a man prefers neither *A* to *B* nor *B* to *A*, he is said to be indifferent between the two. Indifference between quantities of two goods, therefore, refers to equal preference, or, which comes to the same thing, absence of preference.

#### DIMINISHING MARGINAL RATE OF SUBSTITUTION AND DEMAND CURVE

*Marginal Rate of Substitution.* Substitution analysis starts with taking two interrelated commodities, say *A* and *B*. It would facilitate understanding the analysis, if money is taken to be one of the two given commodities, say *A*. Suppose an individual has given quantities of *A* and *B* (say 50 units each). Suppose also that he is asked to exchange *A* for one unit of *B*. Suppose further that he is just prepared (*i.e.*, he is neither very willing nor unwilling) to do this for four units of *A*. In other words, he is indifferent between one additional unit of *B* and four units of *A*. Then the ratio  $4A/1B$  gives the marginal rate of substitution of *B* for *A*. Marginal rate of substitution is, therefore, the number of units of *A* which would be equally preferred to one additional unit of *B*. It is the ratio between the marginal quantities of two commodities between which the individual concerned is indifferent. It may also be defined as the ratio between the marginal valuations of an individual. Marginal rate of substitution may be briefly expressed as "M. R. S."

*The law.* We now attempt to answer the question: Will M. R. S. of *B* for *A* increase, decrease, or remain constant as our imaginary person has more and more of *B*. Let us start with a position where the M. R. S. of *B* in terms of *A* is  $4A/1B$ , *i.e.*, four units of money for one unit of *B*. Also suppose that the market rate of *B* is higher than its value in the market. So he will exchange *A* for *B*. And he will continue to do so as long as M. R. S. is higher than the market rate.

If, as he purchases more and more of  $B$ , M R S of  $B$  for  $A$  increases the gap between it and the market rate will increase Obviously he will go on purchasing more and more of  $B$  till his whole money (income) is spent There is, however, hardly any commodity on which any individual spends the whole of his money (income) The very fact that he stops purchasing the commodity when yet some money is left with him, shows that M R S cannot increase Similarly, M R S of  $B$  for  $A$  cannot remain constant because in that case also he will exhaust his income on the purchase of  $B$  The only possibility, therefore, is that the marginal rate of substitution of a commodity for another one decreases as a person's stock of the former increases This is known as the law of Diminishing Marginal Rate of Substitution

The validity of this law would be obvious if we assume that commodity  $B$  has a number of uses which can be arranged in descending order of importance In that case as the individual gets more and more units of  $B$ , the additional units are used for less and less important purposes This assumption however is not essential to the argument, because money, after all, is such a commodity as can be put to a number of uses of varied importance Even if various units of  $B$  are of equal importance, as more and more money is spent on it expenditure has to be withdrawn from uses of greater and greater importance

*M R S and Price* Suppose the M R S of  $B$  for  $A$  is higher than the market rate of exchange Our individual will purchase more and more of  $B$  As he does so, the M R S falls till it becomes equal to the market rate If on the other hand, the M R S stands below the market rate, he would be a seller of  $B$ , till, again the M R S and the market rate are equal Thus, an individual's equilibrium of purchase (or sale) is established at a point where the M R S and market rate of exchange become equal This is what is meant by saying that, in position of equilibrium, individual valuations at the margin equal market valuations This statement is not just a simple translation of the other statement that marginal utility and price are equal It does not consider the demand of an individual for a commodity in isolation, it recognizes that an individual's demand for one commodity depends on his demand for other commodities In comparing choices between commodity and money, it evidently compares choices between this commodity and the rest of the commodities

*The law of M R S and the Demand Curve* We have arrived at two conclusions First, that the M R S of a commodity for money (or any other commodity) falls as the individual has more of the commodity Second that the individual buyer stops his purchase at a point where M R S and market price are equal Suppose now that the M R S and price are equal The individual has purchased some amount of the commodity If the price were lower, the individual would have proceeded some more distance, i.e., he would

have purchased more of the commodity. Similarly, at a higher price, he would have purchased less. Thus, the demand schedule of an individual for any commodity must conform to one test, higher prices go with smaller amounts and lower prices with larger amounts.

This is what happens with all buyers in the market. If we aggregate their actions, the conclusion is obvious. At higher prices smaller amounts will be purchased in the market and at lower prices larger amounts will be purchased. Translated into the language of graphs, this conclusion will be that the demand curve for a commodity in a market slopes downwards to the right. In Fig. 4.1, for instance,  $DD$  is a typical demand curve, so that while at the price  $PL$ , the amount demanded is  $OL$ , at a lower price,  $P'L'$  the amount demanded is  $OL'$ .

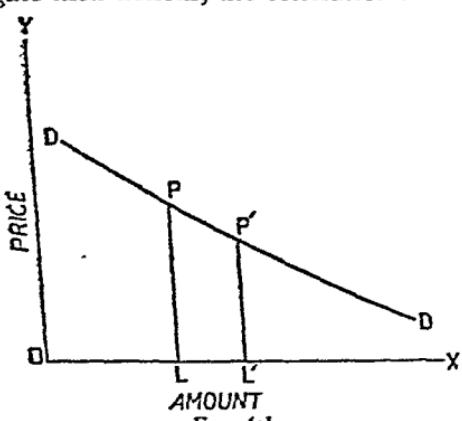


Fig. 4.1.

Substitution analysis brings us to the same conclusion as the utility analysis, viz., demand curve slopes downwards to the right. It is a neater analysis. In fact it can be used to dig deeper into the niceties of the proposition. For this purpose we require the aid of indifference maps which we now propose to explain.

### INDIFFERENCE CURVE AND INDIFFERENCE MAP

*Indifference curve.* An indifference map is a device for graphically representing the preferences of an individual when only two commodities are involved. As money can be treated as one of these commodities, this device can be employed for analysis of demand for any other commodity.

First we have to know what is an indifference curve. Let us revert to our case of two commodities where  $A$  is money—with this difference that the initial holding of the individual consists only of one commodity, that is money. Suppose this is  $50A$  (Rs. 50) and his M. R. S. of  $B$  for  $A$  is  $4A/1B$ . This means he is just willing, or just unwilling, to exchange  $4A$  for one unit of  $B$ . When he has done it, instead of  $50A$ , he comes to possess  $46A$  plus one unit of  $B$ , and he is neither better nor worse off. Between these two amounts— $50A$  or  $46A$  plus  $1B$ —he is indifferent. When he has already purchased one unit of  $B$ , his M. R. S. will fall. Let it now be  $3A/1B$ . In that case

<sup>1/1</sup> be indifferent between a combination of  $46A$  plus  $1B$  and combination  $43A$  plus  $2B$ . After this M. R. S. may be <sup>1/1</sup> hence the next similar combination will be  $41A$  plus  $3B$ . Combinations of commodities as between which an individual

is indifferent may be called indifference combinations. In the above case four indifference combinations are—

- 52 I plus 10 II
- 46 I plus 18 II
- 41 I plus 26 II
- 31 I plus 38 II

If we were to prepare a complete list of such combinations for an income, we get the indifference schedule for that income. When an indifference schedule is represented by a curve, we get an indifference curve. An indifference curve is, therefore, the locus of points representing combinations of two commodity values which are equally preferred by an individual. To draw it, it is represented on one axis, say  $x$ -axis, and  $y$  is represented on the other. Points for the various indifference combinations are located and joined.

*Indifference map.* Suppose instead of starting with an income of 50 I, our individual started with 55 I. The whole set of indifference combinations will be a new one. To represent them, we require a new indifference curve. If in this manner we were to draw indifference curves for various higher as well as lower levels of incomes in terms of  $I$  we will get a series of curves which together constitute an indifference map. Obviously, an indifference map of a person depends on his preferences, that is, on his tastes, and will remain the same so long as his tastes are unchanged. A change in taste makes the old indifference map irrelevant, a new one has then to be drawn.

#### PROPERTIES OF INDIFFERENCE CURVES

We have defined an indifference curve with the aid of an imaginary illustration. Such an illustration, however, does not help us to determine the shape and other properties of such a curve. For that we must invoke the aid of some facts.

*Slope.* Would the curve slope upwards, or downwards, or run parallel to either of the axes? We know that if quantities of both commodities increase, the new combination will be a preference, and not an indifference combination of the old. Thus, in Fig. 42,  $R$

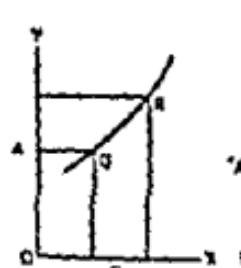


Fig. 42

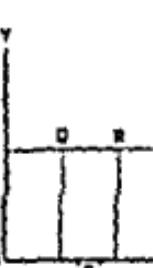


Fig. 43

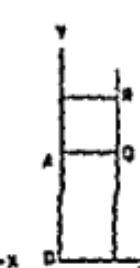


Fig. 44

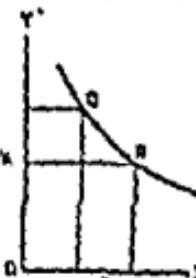


Fig. 45

represents a preferred combination to  $Q$ , and hence the two points cannot be on the same indifference curve. In other words, an indifference curve cannot slope upwards to the right. Similarly, if quantity of one commodity remains unchanged while the amount of

the other increases, the new position will be one of preference.<sup>1</sup> Thus in figures 4.3 and 4.4,  $R$  represents a preferred combination as compared with  $Q$ . Hence an indifference curve will not be parallel to either of the axes. Thus, as a general rule, if the individual has more of one, he must have less of the other commodity (compare  $R$  with  $Q$  in Fig. 4.5) to make the new combination equally valued with the old. An indifference curve will, therefore, slope downwards to the right. This is the first property of such a curve.

*Convexity towards origin* The other helpful fact is the relation between M.R.S. and an indifference curve. In Fig. 4.6,

$I$  is an indifference curve. In moving from  $Q$  to  $R$ , the individual is prepared to part with  $QP$  of  $A$  to get up  $RP$  of  $B$ . Hence the M.R.S. at  $Q$  is given by  $QP/RP$  which is the slope of the tangent at  $Q$ . Consider now Fig.

4.7. As the position moves from  $Q$  to  $R$ , the amount of  $B$  is larger. In accordance with the principle of diminishing marginal rate of substitution, the M.R.S. of  $B$  for  $A$  at  $R$  must be less than at  $Q$ . As is shown in the figure, this is possible only when the curve is convex towards the origin. This is the second property of an indifference curve.

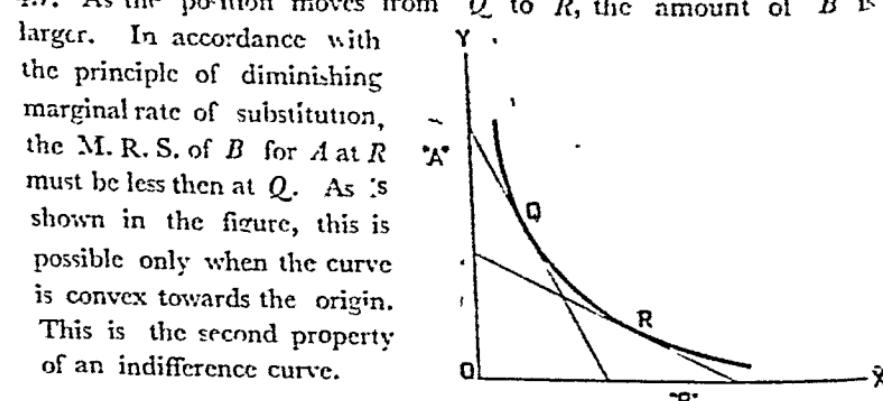


Fig. 4.6.

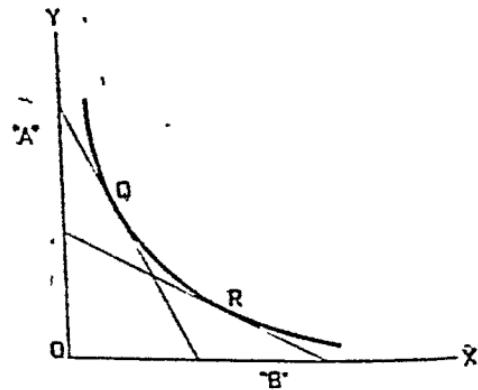
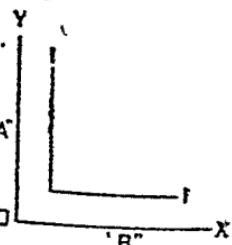


Fig. 4.7.

1 An exception to this statement is found in the case of complementary goods which can be used only in fixed proportion. In such a case if one of the goods increases and the other does not, the additional amount of the former lies useless. Hence for such complements an indifference curve is in the shape of two straight lines each running parallel to one of the axes and meeting each other vertically.



*Non intersection of indifference curves.* Next we call to our aid the axiom that two quantities which are each equal to a third cannot be unequal. This leads us to the third property that two indifference curves cannot intersect. For, if they were to intersect (Fig. 4.8), combinations  $P$  and  $Q$  would be each equally preferred to  $R$  and hence  $P$  and  $Q$  must be indifference combinations to each other.  $P$  and  $Q$  will, therefore, lie on the same indifference curve. In other words, the two indifference curves coincide, they are the same curve.

*Indifference curves and improvement of position.* Let us now take two indifference curves,  $I_1$  and  $I_2$ ,  $I_2$  lying to the right of  $I_1$ . Points  $P_1$  and  $P_2$  represent equal amounts of  $A$ , but  $P_2$  represents a larger amount of  $B$  than  $P_1$ . Hence  $P_2$  represents a more valued combination than  $P_1$ . As all the points on one indifference curve represent equal valuations, every point on  $I_2$  represents a combination preferred to that represented by any point on  $I_1$ . An indifference curve to the right represents preferred positions and hence, a consumer would always endeavour to move as much to the right as possible.

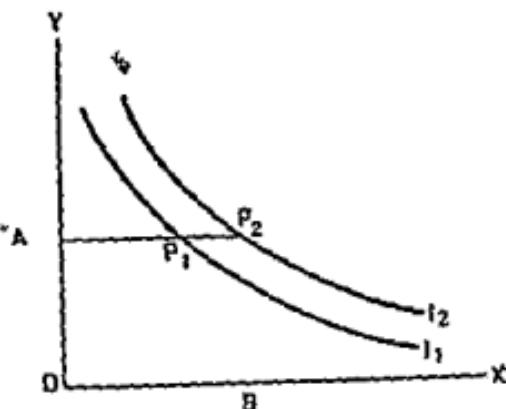


Fig. 4.8

#### EQUILIBRIUM WITH TWO COMMODITIES

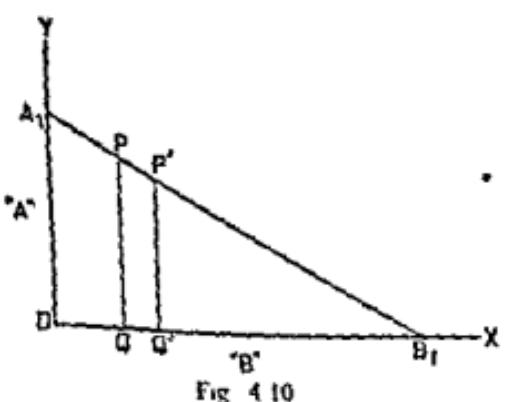


Fig. 4.10

*Price line.* To find out the equilibrium position of an individual when there are only two commodities, we make use of his indifference map and 'price line'. We have explained what an indifference map is. Let us attend to price line.

Let  $OA_1$  represent the income of a person in terms of  $A$ . Let us suppose that the market rate of exchange is such that for  $OA_1$  units of

$A OB_1$  units of  $B$  can be purchased. Then  $A_1 B_1$  represents the income-exchange, or income-price, or more simply, the price line. This line is the locus of points representing combinations which the individual can have. He may have  $OA_1$  of  $A$  and none of  $B$ ,  $OB_1$  of  $B$  and none of  $A$ ,  $PQ$  of  $A$  and  $OQ$  of  $B$ , or  $Q' P'$  of  $A$  and  $O Q'$  of  $B$  and so forth. The limiting circumstances are income and exchange rate. With a change in either of these, the price line will be different.

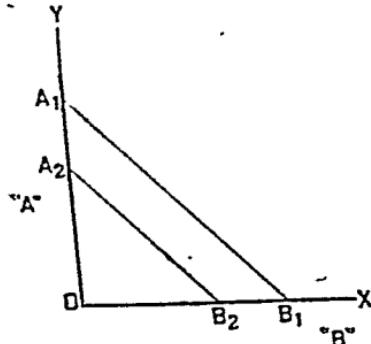


Fig. 4.11.

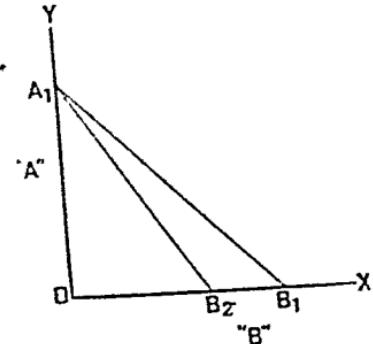


Fig. 4.12.

*Changes in price line.* In Fig. 4.11, we note that when income changes from  $OA_1$  to  $OA_2$ , exchange rate being given, price line changes from  $A_1 B_1$  to  $A_2 B_2$ , the new line being parallel to the old. Fig. 4.12 shows a change in the exchange rate from  $OA_1/OB_1$  to  $OA_1/OB_2$ , income remaining the same. The new price line in this case will be  $A_1 B_2$ .

*Equilibrium purchase.* Given the tastes and the income of an individual, as well exchange rate in the market, the position can be depicted by the diagram

4.13 of  $(I_1, I_2, I_3, I_4) \dots$  . . . constitute his indifference map.  $A B$  is the price line.  $C, C_1, C_2, C_3, C_4 \dots$  are the various combinations of  $A$  and  $B$ , which he can have. As every curve to the right represents preferred combinations, of the above possible combinations, he will select  $C$ . Any combination to the left of  $C$ , he would not have because curves to the right represent preferred positions. Any combination to the right of  $C$ , he cannot have, because he must

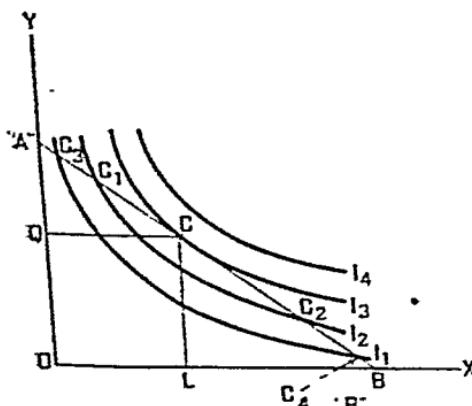


Fig. 4.13.

remain on the price line. Hence the combination which he will have represented by the point where the price line tangentially touches

an indifference curve. In our example, he will give  $AQ$  of  $A$  to get  $OL$  of  $B$ . Equilibrium will be reached when he has  $OQ$  of  $A$  and  $OL$  of  $B$ .

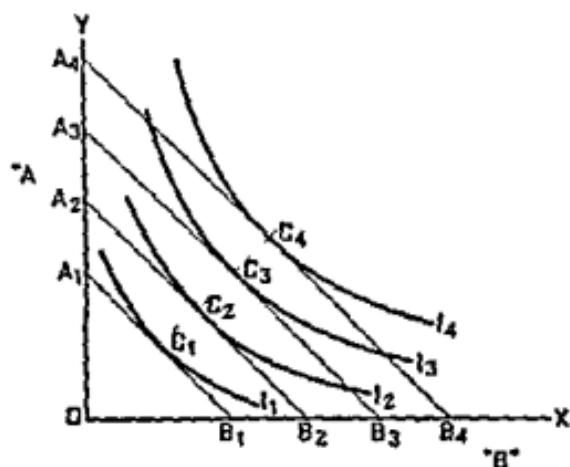
### INCOME CONSUMPTION AND PRICE CONSUMPTION CURVES

In arriving at the position of equilibrium with two commodities, three factors are assumed as given—tastes of the individual, his income, and the market rate of exchange. What will happen when there occurs a change in any one of these factors? Let us introduce such changes one by one and study the repercussions.

**Change in taste.** A change in taste implies that the indifference map is no more relevant. A new indifference map is to be drawn. The conclusion will be the same. Equilibrium combination will be the one represented by the point where the price line touches an indifference curve. A change in taste is analogous to a change of the individual!

**Change in income.** A change in income will mean that while the indifference map remains the same, the price line shifts to a new position, parallel to the old. Figs. 4-14 and 4-15, show the various positions of equilibrium for different levels of income.

The positions of equilibrium are  $C_1, C_2, C_3, C_4$  for incomes,  $OA_1, OA_2, OA_3, OA_4$ , respectively. If we join these points, we get a curve known as the Income Consumption curve (dotted line).



In Fig. 4-14, purchase of  $B$  increases as income rises. In Fig. 4-15, purchase of  $B$  decreases, as income goes up. Both are possibilities. The former is a general case. The latter is a possibility when  $A$  is an inferior good. In most cases, the demand for a commodity will increase when the income increases. But in the case of inferior goods it may decrease. For instance, with an increase in income a person may reduce, or even give up, the use of vegetable ghee and increase the use of pure ghee. The change in demand consequent upon a change in income is called "income-effect". As we have seen, the income-effect may be positive or negative.

*Change in price.* We now come to the other important change. What will happen when there is a change in the market rate of exchange which in our instance means a change in price, since commodity A is money.

When price changes income remaining the same the price line starts from the same point on the Y-axis but its slope on X-axis changes. This slope increases when B becomes dear and falls when it becomes cheaper.

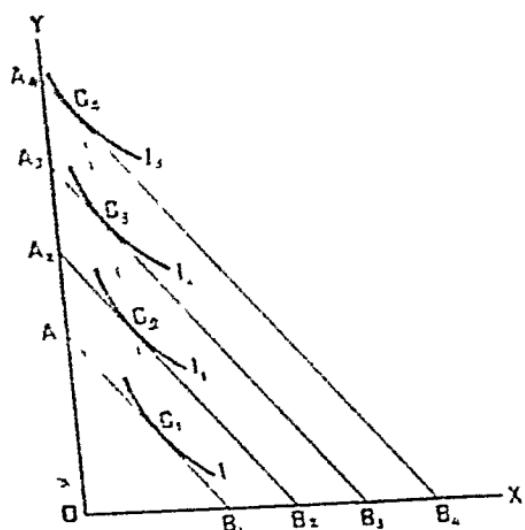


Fig 4.15

Fig 4.16. shows the various price lines,  $A_1 B_1$ ,  $A_2 B_2$ ,  $A_3 B_3$ ,  $A_4 B_4$  . . . . . at different exchange rates or prices of B,  $P_1$ ,  $P_2$ ,  $P_3$ ,  $P_4$  . . . . . are the points of equilibrium, each relevant to one of these prices. The curve  $P_1 P_2 P_3 P_4$  . . . is known as Price Consumption curve.

#### SUBSTITUTION EFFECT

*Income effect.* We have studied the effects of changes in income and in the price of a commodity on its quantity purchased. First

we assumed price as given and studied the effects of changes in income. Every increase in income takes the consumer to a higher indifference curve, i.e., it improves his position. Conversely, a fall in income leaves him worse off. The effect of a change in income on the purchase of the consumer is known as income effect.

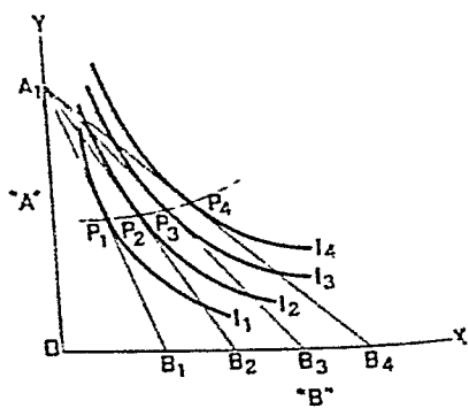


Fig 4.16

**Price effect** Then we assumed income as given and studied the effect of changes in the price of the commodity. The effect of a change in the price of a commodity on its purchase is known as price effect. Price consumption curve traces this price effect.

**Substitution effect** It may so happen that the price of the commodity changes and simultaneously with it income also changes so appropriately that the individual is neither better off nor worse off than before. Nevertheless, a change will occur in his distribution of income among various purchases. If the price of the commodity under consideration has risen, less of it will be purchased. If, on the other hand, its price has fallen, a larger quantity of it will be bought.

For instance, suppose its price rises. It will be tantamount to a fall in income. If income is also raised appropriately, so that the individual is completely but just compensated for the rise in price, he will be neither better off nor worse off. But the income now will be so spent that less of the commodity in question is purchased. In technical language the individual will remain on the same indifference curve, but he will move along it to a position where he has a smaller quantity of the commodity. Such a change in the quantity of the commodity while the individual still remains on the same indifference curve, is called substitution effect.

The concept of substitution effect can be easily explained with the help of the above diagram. Along the x-axis, we show the commodity and along y-axis is shown money. We start with a position where money income is  $A_1$  and  $A_1 M_1$  is the price line.  $Q_1$  will be the position of equilibrium so that the individual purchases  $O M_1$  units of the commodity. Now suppose that the price of the commodity rises and there is a compensatory increase in income so that  $OA_2$  is the new income and  $A_2 B_2$  is the new price line.  $Q_2$  represents the new position of equilibrium. The individual has remained on the same indifference curve but the quantity purchased of the commodity has fallen from  $OM_1$  to  $OM_2$ . Hence movement from  $Q_1$  to  $Q_2$  is substitution effect. Quite similarly, if price and income were to fall in such a manner, that he remains on the same indifference curve but the quantity of the commodity increases, the result would be described as substitution effect.

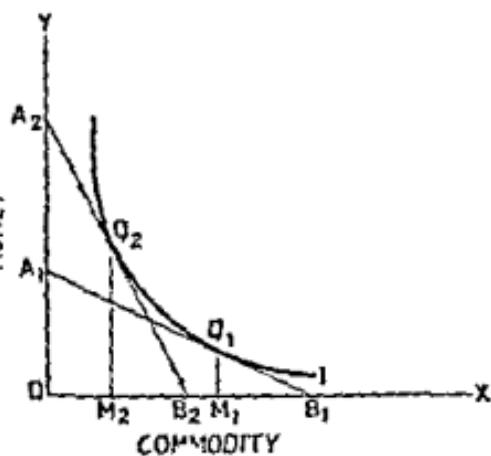


Fig. 4.17

## INDIFFERENCE ANALYSIS AND SLOPE OF THE DEMAND CURVE

With the amount of knowledge which we have gained about indifference curves, we are in a position to determine the slope of the demand curve. Fig. 4.18 will help us towards that end. Start with income  $OA_1$  and price line  $A_1B_1$ .  $P$  gives the equilibrium combination. A change in income from  $OA_1$  to  $OA_2$  shifts  $P$  to  $Q$ . Hence  $PQ$  is income-consumption curve. A change in price from  $OA_1OB_1$  to  $OA_2OB_1$  shifts  $P$  to  $R$ . Hence  $PR$  is price consumption curve.

Fig. 4.18

*Income effect and substitution effect* The change from  $P$  to  $R$  can be resolved into two changes—from  $P$  to  $Q$  and from  $Q$  to  $R$ . The first is the income effect. The second is substitution effect. A fall in price releases a part of the income. It is, therefore, in a sense, tantamount to an increase in income, which produces the income-effect. Moreover a fall in price implies that the marginal rate of substitution, which was equal to the old price, is higher than the new price, which produces the substitution effect. A rise in price produces just the reverse effects.

What the substitution effect will be, can be predicted with certainty. With a fall in price, the M. R. S. of the commodity for money comes to stand higher than the new price. Naturally, the individual purchases more of it. On the other hand, with a rise in price the individual would purchase less. Thus the substitution effect tends to lead to an extension in demand when the price falls and to a contraction in demand when the price rises.

We have already seen that the direction of income-effect is not certain.<sup>2</sup> With a rise in income, the individual will generally purchase more of the commodity, but he may purchase less if the commodity is an inferior good. On the other hand, with a fall in income, he will purchase less of the commodity unless it happens to be an inferior good in which case he may purchase more. May it be noted carefully that even in the case of an inferior good, more may be purchased with a rise in income and less with a fall. In other words, they are not always an exception.

Let us now examine both these effects together. In the case of goods, other than inferior goods, both the income-effect and the

<sup>2</sup> P. 43.

substitution effect will always pull in the same direction. When the price falls, both these effects will pull towards extension in demand. On the other hand, with a rise in price the two effects will lead to a contraction in demand.

*Inferior commodities.* Suppose, the price of an inferior good falls. As a result of substitution effect, amount demanded will tend to extend. As a result of income-effect, the amount may tend to extend or contract. If the income-effect is extension in demand, then the total effect will be the same as in other cases. But, when the income-effect is contraction in demand, the total effect depends upon whether the substitution effect exerts a greater pull or the income-effect. Inferior goods which claim a large proportion of the income of the individual, may be such goods in the case of which negative income effect outweighs the positive substitution effect. Such inferior goods are called Giffen goods. Thus, inferior goods may be Giffen goods or non Giffen goods. It is only in the case of Giffen goods that a fall in price will result in a contraction of their demand. This analysis *mutatis mutandis* applies to a rise in price. Thus it is only Giffen goods the demand for which will extend with a rise in price.

*Conclusion.* The conclusion is obvious. As a general rule, a higher price will go with a smaller amount demanded while a lower price will be accompanied by a larger amount demanded. In the case of inferior goods, this rule may sometimes not hold good—when the inferior good is a Giffen good. In the rest of the cases, which form a large majority total the rule will be valid. A typical demand curve will thus slope downwards to the right, smaller amounts being associated with higher prices and larger amounts with lower prices.

#### PRICE CONSUMPTION CURVE AND CONVENTIONAL DEMAND CURVE

*Conventional demand curve.* We have seen above that an individual's demand curve for a commodity slopes down to the right. We have used the term "demand curve" in its conventional sense. In it price is measured along the vertical axis and the amount of the commodity along the horizontal axis. The curve correlates the two.

*Is price consumption curve a demand curve?* Some writers have claimed that price consumption curve is a demand curve. If quantities of a commodity are measured along the horizontal axis and money income along the vertical axis, and a price consumption curve is traced then, given the income it is possible to read off the quantities of the commodity which will be purchased at various prices. For instance in the diagram below  $OP$  is the price consumption curve relevant to the income  $OA$ . If the price of the commodity is  $OA_1/OB_1$ ,  $Q$  will be the point of equilibrium. In other words, amount purchased of the commodity will be  $OM$ . If the price rises to  $OA_2/OB_2$ , amount demanded contracts to

$OM_1$ . Similarly, if the price falls to  $OA/OB_2$ , amount demanded contracts to  $OM_2$ .

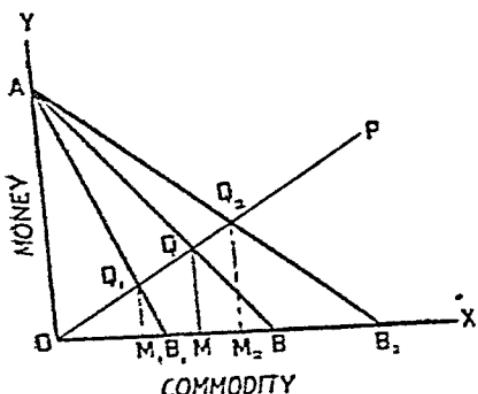


Fig. 4.19.

*Comparison of the two techniques.* It is obviously of interest that the two techniques be compared. The following points deserve notice:

1. In drawing a conventional demand curve income is assumed as given. It is, however, enough to know that as price changes, income remains the same. Given this fact, the change in amount demanded can be read off on the demand curve. A price

consumption curve is also relevant to a given level of income. In this case, however, it is not enough to know that income does not change when price changes. For reading off changes in amount demanded consequent upon changes in price, it is necessary to know *what* is that level of income to which the curve relates.

2. In the case of conventional demand curve, price is represented along the  $y$ -axis. Changes in price are easy to read off as well as to comprehend. In the case of a price consumption curve changes in price are shown as the ratios of the intercepts of the price line on the two axes (e.g.,  $OA/OB$ ). Such changes are less easy to comprehend.

3. The conventional demand curve slopes downwards to the right. It is easy to realise by a look at this curve that amount demanded contracts when price rises and extends when price falls. Price consumption curve starts from the origin and slopes upwards. It does not so obviously indicate the inverse relation between changes in price and consequent changes in amount—at least to those who are not versed in mathematical methods.

4. When we come to the question of determination of price, we shall juxtapose the conventional demand curve with the conventional supply curve to trace the position of equilibrium. Price consumption curve cannot serve this purpose.

- Our conclusion, therefore, is that even though a price consumption curve can serve the function of a demand curve in showing the relation between changes in price and amount, it is a complicated and clumsy tool. And it fails to be of service on many occasions where the conventional demand curve is really helpful.

## FURTHER CONSIDERATIONS ABOUT DEMAND

## Law of Demand

*Statement of Law.* The law of demand is well as the substitution analysis, both lead us to the conclusion that a typical demand curve slopes downwards. This is the relation between the price of a commodity and its amount demanded and hence we know is the Law of Demand. This law states: At a higher price less of the commodity would be purchased and at a lower price more of it could be purchased, provided other determinants of demand remain unchanged.

The law of demand is a qualitative and not a quantitative statement. It speaks of the direction of change in the amount demanded and not of its magnitude. For instance, suppose we are asked that if at a price of Rs. 30 per hundred the amount of milk demanded was 100 in units what would have been the amount demanded if the price were Rs. 40 per hundred? All that we can say with the aid of this law is that the amount demanded would have been less than 500 in units. *How much exactly it would have been, this the law does not enable us to say.*

*Let us point out a cause.* We have in the statement of the law, as in the phrase provided other determinants of demand remain unchanged. This clause is an essential part of the statement. Demand is a function of price. But it is not a function of price only. There are many other factors like population, incomes, tastes, etc., on which also demand depends. If there is a change in price and there is a simultaneous change in any one or more of these factors, the composite result may be indeterminate. For instance if the price of wheat rises and at the same time population in the area increases, it is not possible to predict what would happen to amount demanded. Similarly, if the price of wheat rises and money income of the people also rise, the composite result of the two changes is difficult to tell. To take another instance if the price of tennis ball rises while that of tennis rackets falls, one cannot be certain whether as a result of these changes, people will play more tennis or less and thus purchase more tennis balls or less. To avoid such complications, we use the phrase referred to above. There are two other ways of stating the law if the use of such a phrase is considered cumbersome. First, we may state the law in terms of a tendency. A higher price would tend to reduce amount demanded and a lower price would tend to extend it. A second, and probably a better, method is to speak of different prices as alternatives at a time rather than as successive

changes. We can then state the law of demand thus: "At a given price the amount demanded is less than what it would have been if the price were lower and is more than what it would have been if the price were higher."

*Exceptions to the law.* The law of demand is a general statement. To this rule there are some exceptions. We have already noted one case in which there will be different results. That is the case of Giffen goods. A fall in price is the case of such goods tends to reduce and rise in price to extend demand. Another possibility of a different result exists in the case of goods which are wanted as marks of distinction. Thus, a rise in the price of diamonds may extend its demand because, being costlier, they are now a better mark of distinction and thus attract more custom from the wealthy. A third possibility is in the case of those commodities where consumers judge the quality by price. In such cases—of say, cream, powders or even clothes—producers have sometimes found their sale going up when they have raised the prices of their products. The wealthy customer adjudges those very products as superior at higher prices which he considers as inferior at lower prices.

### DEMAND AND AMOUNT DEMANDED

*Extension and contraction of demand.* In everyday parlance it is usual to use the term "demand" and "amount demanded" to connote the same meaning. In Economics, it is found convenient to attach different meanings to them.

The relation between price and purchases gives us the demand curve. On this curve, we can read the amounts that would be

purchased at various prices. In Fig. 51, at the price  $PL$ , amount demanded is  $OL$ . If the price were  $P'L'$ , amount demanded would have been  $OL'$ . Thus, when price changes, amount demanded is different but the demand curve remains the same. This is expressed by saying that a change in price changes the amount demanded, but not the demand. Changes in the amount demanded are called extensions or contractions as the case may be.

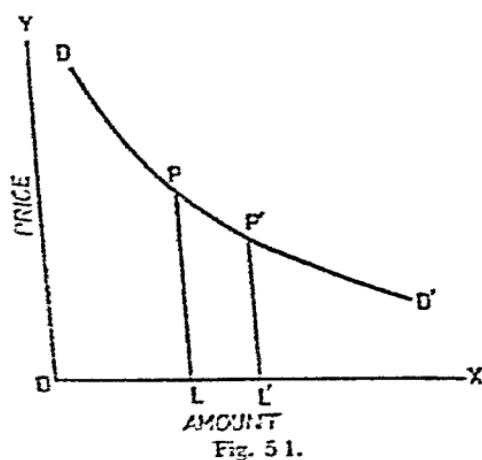


Fig. 51.

*Increase and decrease of demand.* The influence on demand of changing one of its determinants, other than price, is called a change in demand. It may be an increase in demand or a decrease in demand.

An increase in population, for instance, increases demand and vice versa. Similarly, when more people acquire taste for a commodity, or when prices of its substitutes rise, or when the prices of its complements fall, the demand for the commodity increases. In the reverse circumstances, it decreases.

We may now explore the exact implications of a change in demand. Take the case of a town, where electric power is being supplied by the Government. Let us start with a position of equilibrium, where the price per electric unit is annas four and the consumption is five lakh units. Now suppose that the population of the town increases somehow. Obviously, if the Government continue to charge the same rate per unit, units of electricity consumed will be more than before. On the other hand, if the Government does not produce more power, it will find itself in a position to charge a higher rate. In other words, an increase in demand implies that at any given price a larger amount will be purchased, or, that any given amount would be demanded at a higher price. Conversely, a decrease in demand implies that if price remains the same, amount demanded will be less, and if amount remains the same, price will be lower.

A change in demand thus is a replacement of the demand schedule by a new one. When there is an increase in demand, the amount shown against every price is larger than before as under:

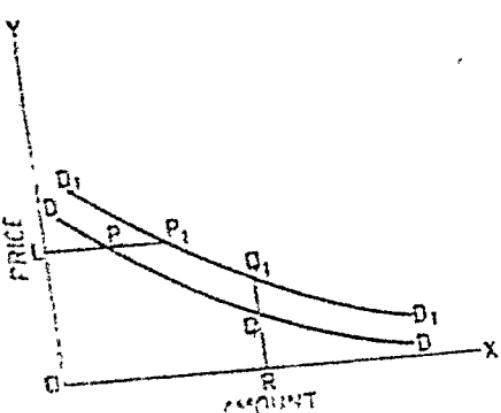
TABLE V-a

Price per unit of commodity  + (Rs.)	Units of commodity demanded initially	Units of commodity demanded after increase in demand
2	1200	1450
3	1050	1270
4	910	1120
5	800	950
6	695	800

Similarly, when there is a decrease in demand, the amount shown against every price is smaller than before. With an increase in demand, the demand curve shifts to the right and takes an upper position. On the other hand, when there is a decrease in demand, the demand curve shifts to the left and takes a lower position:

ECONOMIC THEORY

In Fig. 5.2 the curve  $D_1D_1$ , represents an increase in the demand over the curve  $DD$ , so that at any price  $OL$ , the amount demanded is  $LP_1$  ( $P_1$ ) in comparison to  $LP$ . Also at any given amount  $Q_1R$  is demanded at a price  $Q_1$ , which is higher than  $Q_1R$ , the price of  $DR$  on the original demand curve. If  $D_1D_1$  be the original curve, then a curve in the position of  $DE$  would represent a decrease in demand.



It may be noted that while a change in amount demanded may be caused in a change in price, a

### DEMAND AND THE SELLER

**Total revenue.** Significance of demand to the seller lies in the fact that it brings him sales-receipts or revenue. From his point of view, the question of demand has to be studied with reference to revenue. Total revenue of a seller is the money that he receives from his total sale. If each unit is sold at a different "price", total revenue is the *total* sum of these price. If every unit is sold at the same price then the multiple of price and number of units gives total revenue. Thus if the price is two rupees per unit and total sale is ten units, total revenue will be  $2 \times 10 = 20$  rupees.

**Average revenue**, i.e. Average revenue is the revenue per unit of sale. It is found by dividing total revenue by the number of units. Obviously, if different units are sold at the same price then average revenue equals price. Demand curve being the pictorial relation between price and amount demanded, it is also the pictorial relation between the average revenue and amount sold. Thus if we were to draw the demand curve for the product of an individual producer, we can treat it also as his average revenue curve. Similarly, if we draw the market demand curve for a commodity, it can also be treated as the average revenue curve of the whole industry. Demand curve is therefore also the average revenue curve.

**Marginal revenue.** Marginal revenue is the revenue earned from the marginal unit. It is the difference made to the total revenue if a unit reduction were made in the amount sold. Thus if fifty units could be sold for Rs. 140 and forty-nine units for Rs. 138, then marginal revenue of fifty units is two rupees. In algebraic language, marginal revenue on a sale of units is the total sale proceeds of  $n$  units minus the sale proceeds if  $(n-1)$  units were sold.

**Interrelation.** If total revenue schedule for a product is given, we can easily discover the average revenue as well as the marginal revenue schedules from it. Consider, for example, the following table:

TABLE V b

Amount of commodity (Units)	Total Revenue Rs	Average Revenue Rs	Marginal Revenue Rs
1	10	10	10
2	18	9	8
3	24	8	6
4	28	7	4
5	30	6	2
6	30	5	0
7	28	4	-2
8	24	3	-4

Average revenue of a given amount is found by dividing total revenue by the amount. For example, average revenue from a sale of four units is  $28/4=7$ . Marginal revenue is the addition made to the total revenue by the marginal unit. Thus marginal revenue of four units is  $28 - 24 = 4$ . We can also discover the total revenue schedule if average revenue schedule or marginal revenue schedule were given. Total revenue of any given amount is the product of average revenue and the amount. Also, total revenue of a given amount is the sum of all marginal revenues up to that amount.

It is important to note how we can read off total revenue on an average curve. In Fig. 5.3.,  $AR$  is the average revenue curve.

Total revenue of an amount  $OQ$  is given by the area of the rectangle  $OQPR$ . In Fig. 5.4.,  $MR$  is the marginal revenue curve. Here total revenue for the amount  $OQ$  is the area  $OQPL$ .

Relation between average revenue and marginal revenue is also of interest. It is evident from Table 5-a., that for one unit average and marginal revenues are equal. It is also evident that as

the average revenue falls,

marginal revenue also falls. In fact marginal revenue falls more rapidly than the average revenue and thus marginal revenue for different amounts is less than average revenue. In other words, if we were to draw average revenue and marginal revenue curves, both would start together, but, throughout its length, marginal revenue curve would lie below the average revenue curve.

In the case of straight line curves, this relation is more precise. In Fig. 5.5  $AR$  is a straight line average revenue curve and  $MR$  is the corresponding marginal revenue curve. Of any given amount  $OQ$  total revenue, according to average revenue curve, is the area  $OQPL$ , and according to the marginal revenue curve, it is the area  $OQSR$ .

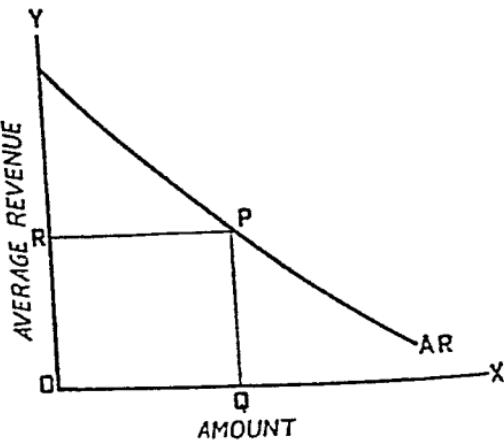


Fig. 5.3.

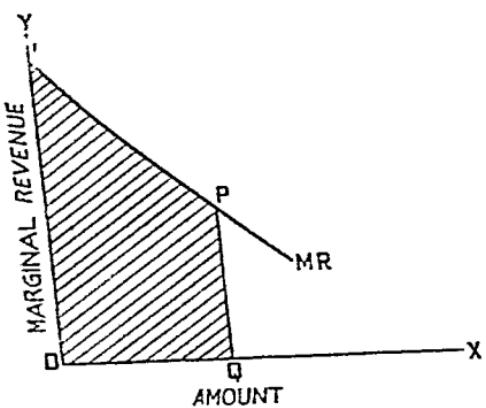


Fig. 5.4.

*Geometrical method* The second method of measuring elasticity is the geometrical method. Here, elasticity of demand is sought to be calculated from the demand curve, with the help of the formula used in the first method.

In Fig. 57  $DD$  is the demand curve and  $LP$  is the tangent to it at  $Q$ . When the price changes from  $OS$  to  $O'S'$ , the quantity changes from  $OL$  to  $O'V$ . If the change in price is small,  $Q_1$  will be very close to  $Q$  and  $O'V$  will be approximately equal to  $OV$ . Now,

$$\begin{aligned} e_d &= \frac{LM/OL}{SM/OS} = \frac{LM}{SM} \times \frac{OS}{OL} \\ &= \frac{TI}{QT} \times \frac{OS}{OI} \\ &= \frac{LP}{QI} \times \frac{OS}{OI} \quad (\text{Triangles } QTI \text{ and } QLP \text{ are similar).} \\ &= \frac{IP}{OI} \times \frac{OS}{QI} \\ &= \frac{IP}{OI} \quad (DS = QI) \\ &\approx \frac{PQ}{QR} \end{aligned}$$

If it is a straight line curve as in Fig. 58, elasticity of demand when the price is  $PQ$  is  $PT/PI$ . At the price  $P'Q'$  it is  $P'T/P'I$ . Clearly, then, elasticity of demand at different prices, is different. This conclusion has three important lessons for us:

(i) As for any commodity elasticity of demand may be different at different prices, it is not wise to make generalised comparative statements about elasticities of demand for two commodities. It would, for example, be incorrect to say that demand for bicycles is more elastic

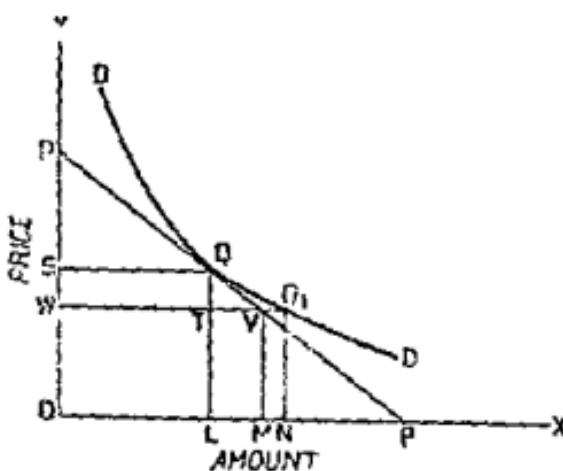


Fig. 57

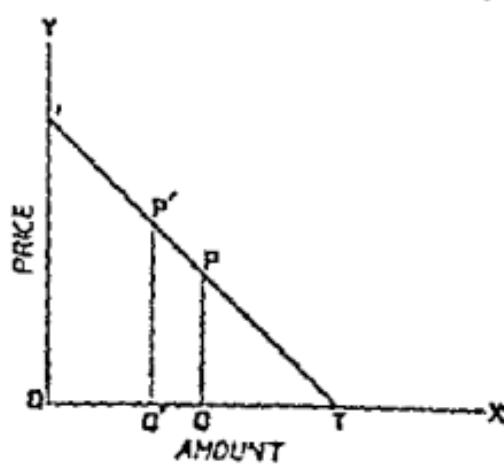


Fig. 58

than the demand for shoes. It may be possible to find out a pair of their respective prices at which demand for shoes is more elastic. If at all any such comparisons are to be made, it may be done "at the prevailing" prices of the two.

2. To find out elasticity of demand for a commodity, the change in price must be very small, otherwise we might find ourselves calculating elasticity of demand at two prices at the same time. This point may be clarified by an illustration. Suppose the quantity demanded of a commodity at two prices is as under:

Price per unit)	Amount demanded (Unit.)
Rs. 5	50
Rs. 6	45

Taking Rs. 5 as the initial price, elasticity of demand would be  $\frac{5}{5} \times \frac{1}{5} = 1.0 = 1$ . And taking Rs. 6 as the initial price, it would be  $\frac{5}{6} \times \frac{1}{9} = 5/6 = 2/3$ . The discrepancy arises because of two reasons. First, elasticity of demand at different prices is different. Second, it is a mistake to study elasticity of demand with such big changes in price.

3. As a rule, elasticity of demand is different at different

points of demand curve as shown above. There are, nevertheless, three kinds of curves in which elasticity of demand will be the same throughout the length of the curve.

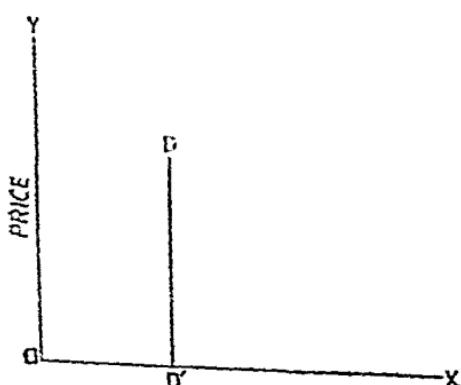


Fig. 5.9.

When the curve is parallel to the X-axis (Fig. 5.9), amount demanded does not change, whatever the change in price. In such a case, elasticity of demand is zero at every

price. Such demands are said to be rigid. At the other extreme lies the case of infinite elasticity of demand. In this case, the demand curve runs parallel to the  $x$  axis (Fig. 5.10). A small rise in price reduces the amount demanded to zero, while at the price  $OD$  any amount is saleable. The third case is of a rectangular  $R$  hyperbola shown in Fig. 5.11. Here the elasticity of demand is unity at any point of the curve.

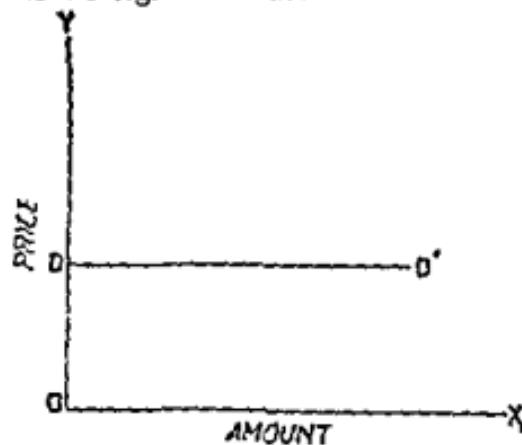


Fig. 5.10

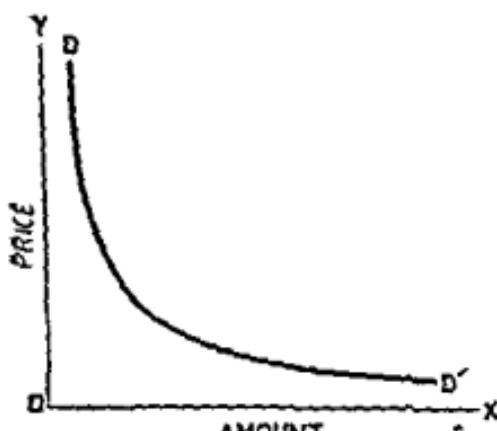
*Method of total outlay*

Fig. 5.11

The third method of measuring elasticity of demand is from the total outlay or total revenue. High elasticity of demand implies that extension in demand is proportionately more than the fall in price and thus the total outlay increases. Similarly low elasticity of demand implies that extension in demand is proportionately less than the fall in price and thus the total outlay falls. This leads us to a triple formula. When the price falls:

1. If the total outlay increases, elasticity of demand is more than unity.
2. If the total outlay decreases elasticity of demand is less than unity.
3. If the total outlay remains the same, elasticity of demand is equal to unity.

Similarly, elasticity of demand is respectively more than less than, or equal to unity, according as the total outlay is less than, more than, or the same as before when the price rises.

*Marginal revenue and elasticity* This method of measuring elasticity of demand enables us to establish a relation between marginal revenue and elasticity. We have already seen that

marginal revenue is positive, negative, or zero, according as total revenue increases, decreases or remains constant when a little more is sold and purchased. Extension in purchases comes with a fall in price. We have also seen that elasticity of demand is more than, less than, or equal to unity according as, consequent upon a fall in price, total revenue is more, less or unchanged. Hence when elasticity of demand is high, marginal revenue is positive. When the former is low, the latter is negative.

And marginal revenue is zero when elasticity of demand is unity.

*Average Revenue, Marginal Revenue, and elasticity.* An exact mathematical relation may be deduced between marginal revenue, average revenue and elasticity of demand in the case of straight line curves.

In Fig. 512  $AR$  and  $MR$  are respectively the average and marginal revenue curves. For the amount  $OT$ .

$$\begin{aligned} \text{Elasticity of demand} &= PL/PR = OS/OR \\ &= PT/PQ \quad (\text{Since } SR \text{ and } PQ \text{ are equal}) \\ &= PT/PT-QT = \frac{\text{Average Revenue}}{\text{Average Revenue - Marginal Rev.}} \end{aligned}$$

if we put,

$e$  equal to Elasticity of demand,

$A$  .. " Average revenue,

$M$  .. " Marginal revenue,

then,

$$e = \frac{A}{A-M}$$

This relation is important and needs to be known in all its forms.<sup>1</sup>  
Its other two forms are,

$$M = A(1-1/e) = A\left(\frac{e-1}{e}\right)$$

$$A = M\left(\frac{e}{e-1}\right)$$

<sup>1</sup> Though we have established the relation for straight line curves, it is true even when curves are not straight lines. For, even when the average revenue curve is curved, the marginal revenue corresponding to any point on the average revenue is the same as marginal value corresponding to the tangent at that point.

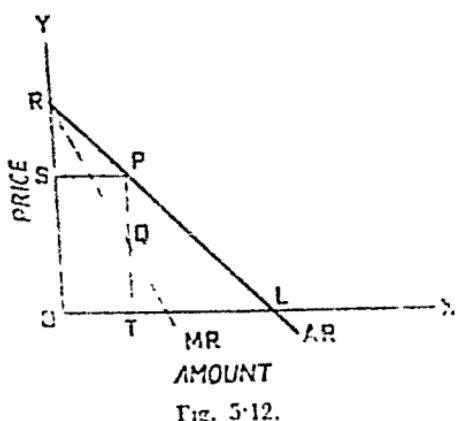


Fig. 512.

## CONSUMER'S SURPLUS

*Price and utility.* Utility of a unit of a commodity sets a limit to the maximum which the buyer would be prepared to pay for that unit. If the price is higher, he would not purchase it. If the price equals its utility, there is a balance between what he gets and what he pays. In case the price is lower than utility, he will purchase it and yet pay less than the maximum he is prepared to pay for it. The difference is called "Consumer's Surplus".

In case a number of units are purchased, price and utility of the marginal unit are equal. There is thus a balance at the margin. On all other units, which may be called intra-marginal units, there is a surplus of utility over price. The sum of these surpluses constitutes "Consumer's surplus".

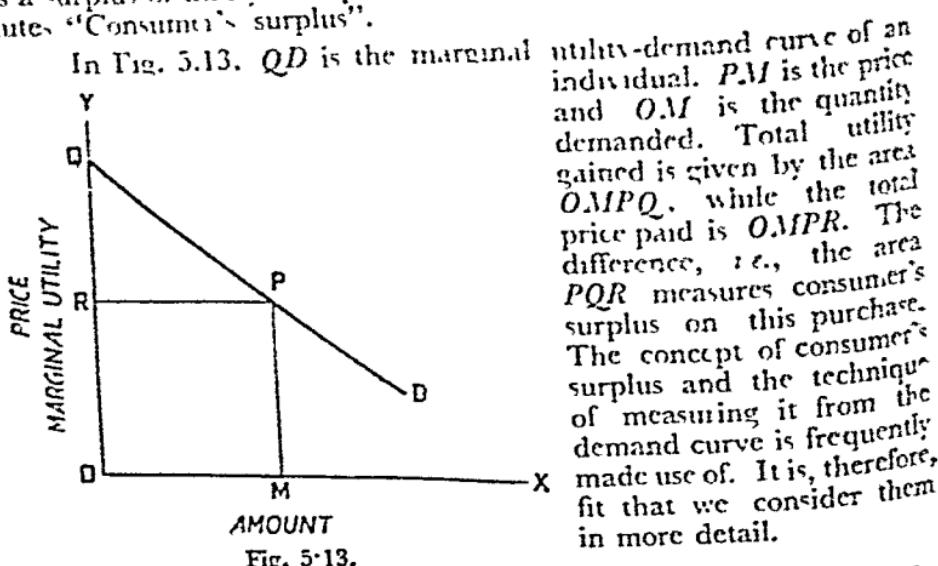


Fig. 5.13.

*Buyer's surplus.* There is, first of all, a confusion about utility aspect and satisfaction aspect of this concept. Consider the case of a person who goes to purchase a melon. Judging a piece in the market, he places its utility at, say, ten annas while the price charged by the seller is eight annas. Suppose further that on actual eating he finds that it is not as good as he had thought and is hardly worth six annas. Now, if we consider utility, it is a case of consumer's surplus, but if we consider satisfaction, it is a case of consumer's loss. Marshall would get out of this dilemma with the aid of the assumption already referred to, i.e., satisfaction is always proportional to utility. Boulding, on the other hand, suggests that as generally consumer's surplus is calculated on the basis of utility, the concept be named "buyer's surplus", rather than consumer's surplus.<sup>2</sup>

*Hicksian consumer's surplus.* In Fig. 5.13,  $RP$  is parallel to the  $x$ -axis. This implies two assumptions. First, that all units are purchased at the same price. This is our usual experience in practice

<sup>2</sup> Boulding, *Economic Analysis*, p. 717.

may, in due course of time, change the demand curve. For instance, a tax on Gaudhi cap may throw it out of fashion. In that case, the demand curve may change its position, say from  $DD$  to  $D_1D_2$  (Fig. 6.16).

In such a case, actual loss of consumer's surplus will be less than that calculated by the above analysis. Similarly, a tax on diamonds may make them better marks of distinction and the actual loss of consumer's surplus may be more than that indicated in this analysis.

This analysis also does not take into account the effects of a tax on a commodity on the demand for its related goods.

A tax on one kind of fruit may shift the demand from this fruit to other fruits. There will be a loss of consumer's surplus on the former but a gain of consumer's surplus on the latter. The net loss of consumer's surplus is, therefore, less than what we find by considering the taxed commodity alone. On the other hand, a tax on a commodity reduces not only its quantity demanded but also the quantities demanded

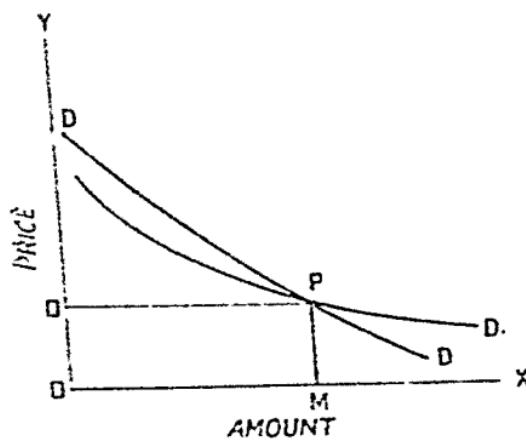


Fig. 6.16.

of its complements as well. There is thus a greater loss of consumer's surplus than we can know of by considering the demand curve of the commodity in isolation.

**Conclusion.** The method of assessing the burden of a tax by computing the loss of consumer's surplus has, therefore, to be adopted with extreme vigilance. It may also be pointed out that the effect on consumer's surplus is only one of the guiding principles in imposing a tax. Many other factors, which are not by any means less important, have also to be considered in deciding whether the tax should be imposed or not.

## CHAPTER VI LAWS OF EXPENDITURE

### PRINCIPLE OF SUBSTITUTION

*Principle of Substitution.* We have studied the question of the art for a particular commodity and arrived at generalizations, etc., under what circumstances amount demanded would extend or contract and under what circumstances demand would increase or decrease. There remains the second macro-economic problem of consumption, the problem of individual expenditure. We live in a money economy and most of the incomes are paid and received in money. Individual expenditure is thus disposal of money income among various items of purchase. The law which explains the manner in which individuals spend their money incomes is known as the principle of substitution. This law is of much wider application and has, therefore, to be studied in some detail.

If we take a look before we do that we must try to understand the meaning of the term substitution. It may refer to a choice between two or more commodities, or between two (or more) uses. In the former sense substitution means using, for a given purpose, one commodity rather than another. Two commodities, either of which can be put to a given use, are called substitutes of each other. One characteristic of substitutes is that they compete with one another in claiming expenditure from the consumer. When this criterion is strictly applied all commodities in which an individual spends become substitutes of one another. Defining substitutes on such a basis would be adopting too broad a definition. For purposes of analysis, therefore, it is only those commodities are considered substitutes which are alternatives of one another in satisfying the same want.

When the choice is between two (or more) uses of the same commodity, such uses are said to be alternatives of each other. In such cases substitution means putting a given commodity to one use rather than another. It is this kind of substitution to which the Principle of Substitution applies.

### PRINCIPLE OF SUBSTITUTION

*Equality at margin.* Principle of Substitution is a general law which is said to pervade the whole field of economic activity. It is at work in spheres of private as well as public expenditure, in production and taxation. We may state the law in very broad terms. We may say that according to this law, in the various spheres of economic activity, men, to achieve best results, take to substitution till there is equality achieved at the margin. Equality at the margin is synonymous with best economic results. This statement of the law is very broad indeed and hence is neither satisfactory nor self-explanatory. It is, therefore, advisable to state the law and to study its working in different divisions of our study at relevant places.

*Law of equi-marginal utility.* In the field of individual expenditure-best results are achieved when marginal utility is equalised in all uses. That is why principle of substitution, as applied to individual expenditure, is known as the law of equi-marginal utility. Equalisation of marginal utility in different uses maximises aggregate utility. On the assumption that satisfaction is proportional to utility, the law of equi-marginal utility also becomes the law of maximum satisfaction.

The law of equi-marginal utility states: "A consumer distributes a given quantity of any commodity among its various uses in such a manner that its marginal utility in all the uses is equal." He does so because such a distribution results in maximum utility. To prove the veracity of this statement we have to establish two facts. First, if the consumer has distributed his commodity among its uses in such a manner that marginal utility in different uses is unequal, aggregate utility will increase if he shifts some amount from those uses where marginal utility is less to those uses where marginal utility is more. Second, if the consumer has so divided the amount that its marginal utility in various uses is equal, any change in the arrangement would reduce aggregate utility.

For convenience let us suppose that the commodity, call it X, has only two uses, call them A and B. Suppose further that the individual has eight units of X and that marginal utilities of various units in the two uses are as under:

TABLE VIa

No. of units of X	Marginal utility in the use 'A'	Marginal utility in the use 'B'
1	75	45
2	62	38
3	50	30
4	39	23
5	30	15
6	21	10
7	12	5
8	5	2

Let us start from the position that the consumer has used three units of X in A and five units in B. Marginal utility in the two uses would be unequal—fifty in A and fifteen in B. Now, if he shifts one unit from the use B where marginal utility is less to the use A where it is more, there will be a net gain in aggregate utility. For, by such a shifting total utility in use B will fall by 15 while that in use A will rise by 39. Such shifting from the use where marginal utility is less to the use where marginal utility is more will increase aggregate utility till marginal utility in the two uses is no more unequal.

Of the eight units of X, when five units are put in the use A and three units in B, marginal utility in both cases becomes thirty.

According to the law of diminishing returns, the utility of an additional unit in either use is less than that of the previous unit. If therefore, the consumer permuted it to shift one unit from either of the two uses and put it in the other, there will be a loss of utility of utility and a gain of less than one unit. Hence there will be a net loss. According to the above rule, if he shifts one unit from use A to B, total utility in use A will be reduced by unity and in use B it will increase by twenty three. There will be a net loss of seventeen units of utility. On the other hand, the consumer can't do this. It is, therefore, the gain from this shifting will be twenty six units of utility while the loss will be thirty. One reason here is a net loss.

Hence when marginal utility in the two uses is unequal, this cannot be the best using rule because a greater utility can be increased by shifting some commodity from one use to the other. And when marginal utility in the two uses is equal, any disturbance in the arrangement reduces aggregate utility. It is, therefore, the arrangement which can give maximum utility and hence maximum satisfaction.

*In case of one.* It is necessary that the reader takes note of three important points in connection with the law of equal marginal utility. First, this law is based on the assumption that every consumer tends to get maximum utility from his holding of the commodity. That is what makes him behave in the manner as stated in the law. Thus this law is only a positive statement. It does not say anything about knowledge of Economics or its laws on the part of the consumer. It states what a consumer does when faced with the problem of distributing a commodity among its various uses. It is a positive statement of "what happens" and not a directive of "what should be done".

*Inter action of marginal utilities.* It may, however, be noted that it is the marginal utility of the distributed commodity, and not of the uses, which is equalised. For illustration, take the case of an individual who has a given quantity of wool which he wants to distribute between making mufflers and jerseys. He will so distribute the wool that the marginal pound of wool used in making mufflers carries the same utility as the marginal pound of it used in making jerseys. The relation between marginal utilities of mufflers and jerseys will not necessarily be one of equality. If the production of a muffler as well as of a jersey, requires one pound of wool, then the distribution which he will achieve will be such as equates marginal utility of mufflers with that of jerseys. But if one pound of wool makes a muffler and two pounds make a jersey, then he will distribute his wool in such a manner that marginal utility of jerseys is twice the marginal utility of mufflers. In general terms we may state that our imaginary individual will so distribute his wool between mufflers and jerseys that-

$$\frac{\text{Marginal utility of mufflers}}{\text{Quantity of wool required to make a muffler}} = \frac{\text{Marginal utility of jerseys}}{\text{Quantity of wool required to make a jersey}}$$

*Small units.* Lastly, we must also note that the law of equi-marginal utility (and for that matter, the principle of substitution as applied to any field of economic activity) assumes that the commodity which is to be distributed consists of very small units. If it is not so, equality of marginal utility in different uses may be difficult to achieve. Consider, for instance, the following table:

TABLE VIIb

Unity of commodity <i>X</i>	Marginal utility in use <i>A</i>	Marginal utility in use <i>B</i>
1	80	75
2	70	65
3	60	55
4	50	45
5	40	35

Suppose as before that the individual has eight units of *X*. If he uses four units in *A* and four in *B*, marginal utility in *A* is higher. But if he shifts one unit from *B* to *A*, marginal utility in *B* becomes higher than in *A*. In this case there is no arrangement which will equalise marginal utility in the two uses. This difficulty would become all the more manifest if the number of uses were large. It arises when the units of the distributed commodity are large and indivisible. Law of equi-marginal utility (as also the principle of substitution) is the law of absence of deviation from equality at the margin. It is not a law of minimum deviation, since minimum deviation is difficult to define and ascertain. It is a general rule regarding the use of commodities which are divisible into small units and which have alternative uses.

In fact, not only has the distributed commodity to be divisible into small units, the use-commodities also should be so divisible. To equalise utility at the margin, small units of the distributed commodity may have to be shifted from one use to the other. But a single-unit shifting will not carry any sense if use-commodities consist of large units and, hence, each unit of them requires a large number of the distributed commodity to make.

#### EXPENDITURE OF MONEY INCOME

*Law applied to money.* Money can be considered as one commodity and the various possible items of expenditure are its alternative uses. Law of equi-marginal utility is, therefore, applicable in this case. In particular terms, we may say that every person so regulates expenditure of his money-income, that he gets the same marginal utility on his outlay in all items of expenditure. It is this manner of expenditure which enables him to derive maximum utility from his income.

We are so often witness to this law being at work. The person who controls the purse of the family—may it be the housewife or the eldest male member—is ever busy deciding how much of the income he will save and how much he will spend. In respect of that part of the income which he has decided to spend, we many times find that he is trying to reduce expenditure on some items and increase it on others. He may reduce the laundry expense to get more milk, smoke less cigarettes but get more clothes. In winter we may find him spending more on fuel and clothes. In summer he will be diverting expenditure to items like cold drinks electric fans, conveyance etc. The aim is to equalise marginal utility of money on different items of expenditure. If he feels that marginal unit of money spent on one item, is yielding less utility than the marginal unit spent on another item he diverts some expenditure from the former to the latter till marginal utilities are equalised.

*Curve representation* Usually, the manner of individual expenditure is depicted with the help of curves. Suppose there are two items in respect of which  $UU$  and  $U_1 U_1$  (Fig 6.1) are the marginal utility curves of expenditure.  $OM$  is the money spent on one item and  $OM_1$  is spent on the other, so that marginal utility in the first item is  $PM$  which is equal to  $P_1 M_1$ , marginal utility in the other item.

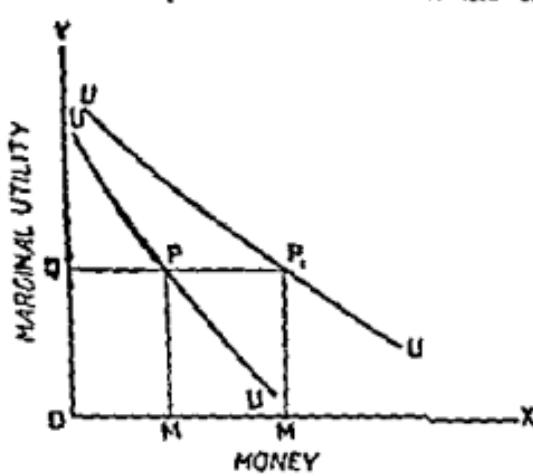


Fig 6.1

But the language of these curves has to be interpreted with caution. It must be remembered that it is the marginal utility of money which is equalised and not the marginal utility of the items of expenditure. Thus if the two items of expenditure are apples and oranges, utility of marginal unit of outlay on apples and the same on oranges will be equal. Relation between marginal utilities of apples and oranges will be

$$\frac{\text{Marginal utility of apples}}{\text{Price per apple}} = \frac{\text{Marginal utility of oranges}}{\text{Price per orange}}$$

Generalising this statement we may say that if  $A, B, C, D$  . . . are the items of expenditure, then the individual will so distribute his income that

$$\frac{\text{marginal utility of } A}{\text{Price of } A} = \frac{\text{marginal utility of } B}{\text{Price of } B} = \frac{\text{marginal utility of } C}{\text{Price of } C} = \frac{\text{marginal utility of } D}{\text{Price of } D}$$

The eight broad items of expenditure were further classified by him into three broad categories, and in respect of these categories he came to the following conclusions:

1. As income increases, percentage expenditure on food decreases. On the other hand, if income decreases, percentage expenditure on food rises.

2. The percentage of income spent on clothing, lodging, fuel and light remains almost unchanged, whether income is high or low.

3. The percentage expenditure on education, health, comforts, etc., increases as income increases, it decreases as income decreases.

D. Engel infers from the pattern of expenditure of upper group how lower group would spend their income if latter's incomes were raised to the level of the former. Thus if incomes of the poor class were raised to the level of the middle class, the "poor class" would begin to dispose of their incomes in the manner in which the middle class are doing. It may be objected that this is not a scientific approach. Every individual has his own tastes and preferences. If the income of a poor individual is raised to the level of a rich individual there is no guarantee that he would begin to spend his income in the manner in which the rich individual is spending. The objection does not hold much water. Engel was dealing with large groups of people and in such treatments, idiosyncrasies of individual tastes and temperaments can be ignored. They are supposed to cancel them out. Conclusions arrived at by Dr. Engel are, therefore, by and large, valid.

We have noted in the last Chapter that, as the income of an individual increases he spends more on all items except the 'Giffen goods.' Notwithstanding the exception, an increase in income results in an all-round increase in expenditure. But the proportion of expenditure on various categories of goods changes. Consequently, percentages of expenditure on some items increases, on some it decreases, while on some others it remains constant.

Engel's law of consumption would carry a much clearer meaning if we were to translate it into terms of necessities, comforts and luxuries. When the income of an individual is very low he spends the entire income on necessities, food claiming a very large proportion of the total expenditure. Investigations made by the Punjab Board of Economic Enquiry into the family budgets in rural areas showed that food claimed between 50 to 60% of the total earning of rural population. Similarly, estimates of the National Income Committee of India reveal that the country spends nearly 63 per cent of its total income on food. This is so because per capita income in our country is very low. As income rises up from its very low level, a part of it begins to be spent on comforts and luxuries as well. More money is spent on food to improve its quality rather than increase its quantity. Thus as income increases, better quality goods are purchased and

also, their variety extends. A limit is then reached after which any increase in income does not influence the amount spent on necessities, especially food. The whole of the additional income, or at least a large proportion of it, is spent on comforts and luxuries. The balance, if any, goes to saving.

*Views of Planning Commission.* The Planning Commission of India hold . . . . as the trend of rising incomes establishes itself, effective demand will grow in the rural sector and widen employment opportunities in small-scale industries as well as in services ancillary to commodity production.<sup>11</sup> Small-scale industries offer a larger variety of goods. They also produce goods of artistic taste. Services ancillary to commodity production refer mainly to health, education and personal attendants. Hence when incomes rise people will spend more on education, health and the like. They will consume a larger variety of goods and may also spend on goods of artistic taste. Thus the view of the Planning Commission is in conformity with the findings of Dr Engel.

It must be noted that Engel's study does not bring out the place of savings in family budgets. He reckoned only the spendable part of it. As a rule, we may say that there is no saving if the income is so low that it can purchase only the necessities of life. As income rises above such a level, there occurs a scope for saving. Whether the individual actually saves or not, or saves more or less, depends on many personal and institutional factors which we shall discuss later on.

*Views of Dr. Pigou* The effect of an increase in income on the pattern of expenditure also depends on the manner in which the rise in income occurs. Economists have held the opinion that as wages of labourers are raised, their standard of living improves which favourably influences their efficiency. Well-paid labour, they say, proves cheap. Employers, on the other hand, contend that if wages increase, workers almost invariably squander their extra earnings on exciting pleasures like drinking, gambling and other vices. Enhancement of wages, they assert, also increases absenteeism. Dr. Pigou refutes this assertion. He differentiates between immediate and ultimate effects of a rise in wages on pattern of expenditure. According to him as wages rise, its immediate effect may be that the workers concerned fritter away their additional earnings on vices. But as time passes and they feel the impact of more urgent needs, they shift their expenditure from vices to genuine requirements of themselves as well as of the members of their families. A more important fact, however, is that this transitional phase may even not occur if enhancement in wages is brought about gradually and imperceptibly. Thus if the income of a person rises in one big jump, there is a possibility that the additional earning is spent on harmful luxuries. If, on the other hand, the same rise comes about slowly and by stages, the additional earning will be spent on necessities and comforts and may be, also on harmless luxuries. Ultimate effect in both cases will be similar.

<sup>11</sup> First Five Year Plan, p. 86.

There is yet another opinion on the matter Dr Pigou has quoted the opinion of Messrs Pringle and Jackson 'That drinking habits are diminishing while wages are rising throughout the country, is one of the most hopeful indications of progress we possess' Such a belief then implies that as incomes of the people rise, their expenditure on drinks and vices diminishes as they begin to feel the responsibilities of gentlemen It is rather questionable however that the rise in income produces by itself any such effect Much depends on the social trends on the activities of the social reformers moralists, religious preachers, and the government All that can be said is that additional incomes may for some time be spent on exciting pleasures, but this dissipation will in most cases prove a temporary phase

*Inelastic wants* Lastly we may consider the case of such groups of people whose wants are inelastic People living in such rural areas which are more or less cut off from the rest of the world may be leading simple life and be content with that life In such cases the general tendency is towards earning more leisure than more income If their income increases by say, better rains, the tendency is to become lethargic and callous in the period that follows If the earning per hour increases they would rather work less hours than earn more Such an attitude towards life and wants, wherever it exists, is a veritable hurdle in the way of economic progress

## CHAPTER VII PRODUCTION OF WEALTH

### INTRODUCTION

*Meaning of the term.* Production of Wealth refers to making goods and services available. As the end of all production is consumption, all productive activity is, in the main at any rate, directed towards producing consumable or consumers' goods. Some services like that of a personal attendant of a musician, are directly consumed. These are included in consumers' goods. Similarly commodities like oranges, tea, etc., are consumers' goods. But there are other goods which are not meant for direct human consumption, but which also constitute a cause for producing consumers' goods. These are called producers' goods. Tools, implements and machinery, etc., which are raw materials and semi-finished products are included in this category of producers' goods. Production of wealth is thus production of producers' as well as consumers' goods.

But what is the exact implication of the word "production"? Does it mean creation? Of course man cannot create matter, just as he cannot act too fast. Thus a man cannot create goods. He may change their shape. He may carry them to the place where they are more intensely required. He may store them till the time when they will be more scarce. In other words, man can only add utilities. Production has, therefore, been defined as the creation or addition of utilities. Yet every act which increases the utility of a good is not production. A person, not seeing hungry, is handing over a loaf of bread to a hungry beggar does increase the use-value of the loaf. But this act is not production because the exchange-value of the loaf remains unchanged. To be precise, production may be defined as the creation or addition of economic utilities or of exchange-values.

The process of production is not necessarily complete when a commodity has attained its final form, i.e., the consumable form. This process extends "till up to the stage when the commodity reaches the hands of the consumer." Various services are involved in carrying the commodity from the factory to the consumer. Packing, preparation, transport as well as the services of the banker, the insurer, the whole-saler, the broker, coolies, and of the retailer, etc., are all productive services. Such services have been given the name of distributive services.

Direct services to the consumers, like those of doctors, singers or teachers, do not result in any tangible product. The acts of their production and consumption are simultaneous. A singer produces as he sings; the listener consumes as he hears. Adam Smith considered such service unproductive as it "does not realise itself in any

particular subject or vendible commodity. He however conveniently forgot that these services are themselves vendible and actually command an exchange value in the market.

*Capitalistic production* We have already distinguished between the producers' and the consumers' goods. The purpose of producing the former is only to facilitate the production of consumers' goods. The interposition of producing the producers' goods has been called making the methods of production roundabout or capitalistic. Grass can be cut with hands but we may first devote some labour to producing a grass cutting blade. Cutting of grass will then have been made capitalistic or roundabout. Next if a machine is made which can be pushed easily and to which the blade can be attached, grass cutting will become more roundabout. It will become still more roundabout if a power machine is produced and suited to the grass cutting machine. As a method of production becomes more and more roundabout realisation of the final product gets more and more removed from the first expenditure of labour. The essence of making production roundabout consists in stretching the process of production i.e. in making it more time consuming. Of course, whether a given roundaboutness would be advantageous or no depends on whether the new chain of processes is economically more productive than the old one.

### FACTORS OF PRODUCTION

A factor of production may be defined as anything without which production would either be not possible at all or would be heavily curtailed. It is instructive as well as advisable to adopt some classification of factors of production which would be helpful in economic analysis. The usual classification is it to find labour and capital.

*Land* Plucking an orange from its branch may not require any instrument or tool, but the existence of a wild orange tree and the effort of plucking are essential to procuring such an orange. Thus for production of goods two factors are indispensable viz., natural resources or land and labour. We have defined production as addition of economic utility. There must be something to which utility may be added. This something is provided by nature and is called land in Economics. Obviously, the term land as used here does not refer to soil only but to all these things provided by nature which aid man in production. Soil, forests, mines, rivers, harbours, light, heat, atmospheric air, etc., all help man in production and are called land.

*Labour* Just as there must be something to which utility can be added, similarly there must be somebody to add that utility. Human effort is thus indispensable to production of wealth. In Economics the current term for human effort is labour. It does not however, include all human efforts. Labour comprises only those

efforts of man which are undertaken in anticipation of some material reward irrespective of the fact whether such efforts are skilled or unskilled, or whether they are mental or physical. Adam Smith included the work of "labouring cattle" also in labour, but modern economists would not agree to stretching the meaning of the term that far. Work may be paid for on a piece basis or a time basis, or on a daily, weekly or monthly basis, it is labour all the same if it is human work. It may appear that only the objective aspect of labour should deserve the attention of the economist and not the subjective aspect. One worker may work for ten hours to produce a table while the other may do the same in eight hours. Subjectively, the former has worked for more time, but, objectively viewed, their efforts are equal. In the modern world, however, there are large factories where hundreds of labourers and machines co-operate to produce commodities. There it becomes difficult to determine the output due to an individual. Wages in such factories are fixed on a time-basis (subjective aspect). And even so, there are different wage-rates for men of different qualifications and experience. Thus both objective as well as subjective aspects of labour are important in their own ways.

*Capital.* Production of wealth is possible without tools and machines, but if their aid is taken, the amount produced is comparatively much greater. In fact, some goods, like railway engines and steamships, would be impossible to produce without the help of machinery. That is why processes of production are made "round-about" and production of intermediate or producers' goods is interposed. These intermediate goods are called capital. Capital may be defined as produced means of production. It comprises all wealth, excluding land, which is harnessed for further production of wealth. Machines, tools, raw materials, chemicals, fuels—all are included in capital. In the world of today, where huge machines are used and large factories are the fashion, capital occupies a very important place in the economy of every country. No wonder, then, that the economic progress of every country has come to hinge on the rate at which capital is formed in the country.

*Enterprise.* Land, labour and capital are thus three factors of production. They may also be called respectively natural, human and material means of production. But the very fact that these factors are more than one makes a fourth factor imperative. Land, labour and capital may be owned by different persons. There must be somebody to get hold of them from their owners and bring them together for the process of production. He must decide how much of each would be used and then procure their requisite amounts. Moreover, the landlord, the labourer, and the capitalist give their respective factors on condition of stipulated payment—for stipulated rent, wages, and interest respectively. Productive process turns out goods which are sold and from their sale-proceeds these payments have to be made. The sale-proceeds may fall short of these payments. It is the person, who volunteers to procure them, who has to guarantee

making such payments. In case the sale proceeds are less than these payments, he suffers a loss. And if they exceed the payments, the balance is his profit. Such a person is called an enterpriser. Enterprise comprises planning, initiation, supervision and responsibility for profits or losses.

*Objections to above Classification.* The classification of factors of production into land, labour and capital has come in for criticism at the hands of many writers. They consider it to be too great an over-simplification of reality. Objections generally raised are two.

First, it is said that under every head we include such heterogeneous elements that it is meaningless to speak of a unit of any factor. No two pieces of land resemble completely in respect of fertility, chemical content, or situation. Similarly, in labour are included various kinds of work right from that of a sweeper to that of the highly skilled surgeon. Therefore, here also, no two workers are similar in their talent, ability and will to work. Capital fares the worst. If we speak of a unit of capital, would it imply a given machine, or a given quantity of a raw material, or a given weight of fuel? In reply to this objection, we may say that though the constituents of every factor are heterogeneous from many points of view, yet there is a common feature in everyone. All things included in land are free gifts of nature. Labour is the reward-carrying work of human beings. Capital consists of goods produced by man with a view to further producing goods with their aid. No doubt difficulties are encountered in defining a unit of any of these factors, but that difficulty is not insurmountable for theoretical analysis. And this classification makes study of many questions comparatively simple. How the natural resources determine the occupational pattern of economic life? On what factors does the productivity and mobility of labour depend? How is accumulation of capital accelerated? Such and many other questions can be discussed and answers to these questions are very full of meaning for the economist, the social worker and the statesman.

The second objection is less fundamental. It is that the line of demarcation between the factors is indistinct, factors shade into one another and each contains an element of others as an impurity. Some capital is invested in every piece of land. Jungles are cleared, fences erected, farm houses built and wells are sunk. Such improvements are not possible to disentangle from land itself. Similarly, expenditure on education and health of labourers, is capital invested in the labourer. The work of every labourer is thus human effort plus the effect of capital, both combined in one. And capital consists of things produced by men with the help of nature's gifts. Capital thus embodies land as well as labour. This however, is a kind of objection which can be levelled against all classifications. Iron ore may contain carbon inseparable from it and yet the chemist does speak of iron and studies its properties. Theoretical analysis would obviously do better to think of factors as separate entities.

### DEFINITION OF A COMMODITY

*Homogeneous product.* We speak of the consumption, production, purchase, and sale of a commodity. What is the meaning attached to the term "commodity" in economic parlance? One characteristic of a commodity which immediately suggests itself to us is homogeneity. On the basis of this test, a commodity is constituted of units which are exactly similar in all respects and are, therefore, perfect substitutes of one another. Thus Hamam Soap, sold by Tatas, is a commodity because its various cakes are identical and no buyer prefers any one of the cakes to the other unless there is a difference of price. A commodity, defined thus, means a standardised product sold by a seller.

To be precise, however, the characteristic of homogeneity implies that the purchasers do not differentiate between units: they regard them as interchangeable. Homogeneity, therefore, does not refer to physical features alone. Quality is not the only basis of preference. Two units may be exactly similar as products but may differ in respect of some other feature or features to which purchasers attach importance. Such features may be real or fancied. Purchasers may prefer one set of units to another for reasons of colour, design or packing. Or, at a given price, purchasers may prefer to buy from one store rather than another because of the former's better location, reputation, dependability, courtesy extended to customers, etc. As the buyers would, at the same price, have one product rather than the other, the two products would not constitute one commodity in the sense of homogeneous units. They would, at best, be substitutes of one another.

Thus a buyer, while making a purchase, takes into account not only the quality of the commodity but also the services which go with it. What he, therefore, purchases at a time is a bundle of utilities. It may be that every single one of these utilities is equal in all cases. It may also be that in the eyes of the purchasers shortcomings and merits balance in the case of every such bundle. In both cases our definition of different units being perfect substitutes would apply.

*Alternative definition.* Whether two articles are identical or substitutes depends on whether buyers consider them identical or substitutes. If we were to draw a list of substitutes of a commodity, we shall find their number infinite. For convenience, we may divide substitutes into close, distant and very distant substitutes. To illustrate the difference, we may recall the example of Hamam Soap. This soap sold by the sales-depot of Tatas at Delhi is a standardised product. Hamam Soap sold by other dealers in Delhi is not completely identical with it because others are not equally dependable or as well located. Hence Hamam sold by other dealers is a substitute for the same sold

Tata's Depot. Other toilet soaps sold by Tata's Depot or by other  
 are also substitutes of Hamam. Hamam sold by other dealers  
 Tatas, and other toilet soaps sold by all dealers (including Tatas)

are close substitutes of Hamam sold by Tata is Washing caps form distant substitutes of it. Moreover, a purchase of one article involves expenditure of money which could be spent on other articles Hence different items of expenditure may be considered as substitutes of one another. Thus uses of consumers' money other than soap are very distant substitutes of Hamam of Tata's sales depot.

It must be obvious that there is a gap between a standard product and its close substitutes, on the one hand, and its distant and very distant substitutes, on the other. This gap helps us to come to another definition of the term 'commodity'. A commodity means a group of products demarcated from others by a gap in the chain of possible substitutes. Toilet soap of all varieties would be considered one commodity according to this definition.

Thus we have two definitions of the term "commodity". One would include only those units which are identical in the eyes of the buyers. The other would include identical units as well as close substitutes but would exclude distant substitutes. Either definition is helpful in its own place. Thus in the study of the law of diminishing utility, it is the first definition that we kept in mind. When, however, we shall come to consider production by a seller in the world as we find it, it is the second definition—commodity in the sense of close substitutes—which will apply.

#### INDUSTRIES AND FIRMS

**Difficulties of definition** Manufacturing activity consists of a number of industries. Some of the important industries of India are cotton, sugar, jute, iron and steel, paper, cement, leather, soap's goods industries. One feature common to each one of these industries is that it is comprised of a group of production units. Production units which are included in cotton industry are those which use cotton as raw material. Units included in leather industry use leather while units in the jute industry work up raw jute. On the other hand, all production units in the sugar industry produce sugar and units in the cement industry produce cement. Thus in the case of some industries, production units included use the same raw materials and in the case of others they produce the same kind of product. However, neither the one nor the other is the criterion common to every industry. Production units in the same industry may use different materials. Sugar may be produced from sugarcane or beet root. On the other hand, there are industries in which units included produce different kinds of goods. One iron and steel unit may be producing chains, a second one rails, and a third one pins. Chemical industry is a fine example of diversity of outputs in an industry. A production unit producing nitric acid is to be bracketed with another producing hydro-sulphite of soda. Not only that. Even where raw materials and products are of the same kind they might still differ in quality. In many cases, products of various firms are not perfect substitutes of one another.

*Price-sales relationship.* Some writers have defined an industry as referring to a group of production units which are interlinked by price-sales relationship. Thus if one producer lowers his price, he will be able to attract others' buyers in the industry. But producers in the same industry may be producing quite different kinds of goods, e.g., production of hockey sticks and football covers in sports industry. And the price changes in hockey sticks may have little effect on the price of football covers. Moreover, the phrase "price-sales relationship" has a wider meaning than taken here. Industries which produce complements have some—though of a different kind—price-sales relationship. Similarly, every industry has a price-sales relationship with the industries which produce raw materials for it.

*Definition.* Thus we find that characteristics of industries, as they exist in the work-a-day world, do not help us to evolve a definition. Our purpose is to make a study of factors which govern outputs, costs and prices of commodities. Keeping this in mind, we may decide upon a definition which suits our purpose and is, yet, not much removed from facts.

We ignore the fact that production units may be multi-product producers. We assume that every unit produces only one kind and quality of an article. Also, we define a commodity in its broader sense, that is, as a group of close substitutes. We may then define an industry to include all those production units which are engaged in the production of a commodity. Thus we allow some variations in the outputs provided the different articles are close substitutes. We also allow differences of methods and raw materials used. But an industry of our conception caters for the same market.

*Plant, factory, firm.* A distinction may be drawn between a plant, a factory and a firm. The term "plant" refers to a complex of factors including a single set of machinery, e.g., a dry cleaning plant. A factory, on the other hand, stands for a unit of production. Within the four walls of a factory may be installed one, two or more sets of machinery. Accordingly, it will be a single-plant, two-plant or a multi-plant factory.

A firm performs entrepreneurial functions. As we have already noted, an entrepreneur bears risk and makes decisions. The two functions may be combined in the term "planning". A firm may then be defined as a unit of planning. We have seen that a factory may have one or more plants. Similarly, a firm may own, supervise and control more than one factory. On the other hand, it is not inconceivable that one factory is owned and controlled by two firms, though in such a case clashes in decisions are inevitable. It is, however, helpful if we proceed on the assumption of one commodity—one plant—one factory—one firm. In other words, we assume that every firm controls only one factory which has only one plant and produces only one commodity. Henceforth we, therefore, take the liberty of using the terms "firm" and "factory" as synonyms.

## ORGANISATION OF A FIRM

**Three forms** There are three important forms of business organisations, viz., individual enterprise, partnership and business corporation or joint stock company. A study of each one of these must provide answers to a number of questions how is the requisite finance procured, who yields control over the policy of the firm, who bears the risk, and what are the liabilities and rights of the financiers?

### I INDIVIDUAL ENTERPRISE

(a) **Features** It is a one man business. All the capital required for the enterprise is supplied by a single person, known as individual producer or individual enterpriser. It, of course, matters not whether the capital invested by him is his own or has been borrowed. The firm and the entrepreneur are in fact indistinguishable in point of assets and liabilities. The assets and liabilities of the firm are his assets and liabilities and vice versa. He can, if he so wishes, put the assets of his firm to his personal use. On the other hand, if ever the debts of the firm exceed its assets, the creditors claim the balance from his "personal" assets. All profits of the firm accrue to him and all losses are borne by him. The maximum limit to which he is liable for losses is set by his total assets, irrespective of the fact whether these are invested or uninvested. In other words, his liability is unlimited. All decisions regarding the quality and quantity of output, methods of production, places where to market, etc., rest solely with him. The control and the risk are undivided. He is the sole proprietor as well as controller of the business.

(b) **Merits** This form of organisation is the most common. It is well suited to agriculture, professions and retailing and is very appropriate for such kinds of business where individual tastes are to be catered to. In one word, this is the form of organisation most suitable for those branches of production where advantages of small units are great. It is also very appealing to those who shirk shy of frictions. With none else to share profits, losses, control or decision-making, the enterpriser is the master of all he surveys. He enjoys all the benefits of a small organisation. Quick decisions can be made. The eye of the master is everywhere. He can see to it that the wastage of materials and labour-time is reduced to the minimum, and that machinery is properly handled.

(c) **Demerits** Individual enterprise has its own demerits. Resources of an individual are necessarily limited. An individual enterpriser is, therefore, almost invariably a small-scale unit. Hence it is unsuited to many modern industries where large amounts of capital are required, e.g., ship-building industry. Countries where agriculture predominates and where manufacturing is not well advanced, individual enterprise also predominates. But in more

advanced countries, though it is so common a form of organisation, its role in the total economy is limited. Lastly the fact of unlimited liability is a handicap. It keeps many non-venturesome investors away from such business.

## 2. PARTNERSHIP

(a) *Features.* Partnership is a firm owned by two or more individuals. Capital required is subscribed by the owners, called partners, in agreed proportions. Profits are also shared by them in agreed proportions. It is, however, not essential that the manner in which profits are shared correspond to the proportions in which capital is subscribed. Some partners may be more intelligent and active, and hence better equipped to control the business, than others. Again, while some partners may be directly participating in the control of the business, others may take no direct part in running it. Those partners, who only subscribe capital and do not take any part in the control or management of the affairs of the firm, are called sleeping partners. Active partners may be paid for their additional services in the form of a fixed monthly salary or an enhanced share in the profits.

Partnership is a unique form of organisation in one respect. Irrespective of the amount of capital which an individual partner has contributed as well as irrespective of the share in profits to which he is entitled, he is liable for all debts of the partnership. If total losses or debts exceed the amount which other partners are not in a position to clear off, he is bound to pay the balance even if it exceeds his personal share. Similarly, if he makes any agreement or incurs a debt in connection with the business, he binds all his partners to its obligations. In legal language, all partners are individually as well as collectively liable for all debts of the firm. Every partner is thus liable to suffer losses for the mistakes of any other partner. It is, therefore, essential that partners have complete faith in the honesty, integrity and business acumen of one another.

Another important feature of a partnership is that it continues to exist only so long as *all* the parties agree to continue with it and have faith in one another. If any one of the partners decides to withdraw or dies, the partnership breaks unless the remaining partners buy him out or find a person who is prepared to buy him out.

(b) *Merits.* A partnership scores over individual enterprise in many respects. Two heads are always better than one. Decisions arrived at by partners in consultation with one another are more sound than decisions made by an individual with none to advise or criticise. Specialisation in control and management is also possible in this form of organisation. Various partners may be differently equipped in respect of technique of production, making sales and purchases, enrolment of labour, etc. Such jobs can be distributed among the partners in accordance with their ability and

experience. Last, but by no means the least is the fact that a number of persons, as a rule, can command more capital resources than a single person. Partnerships can thus manage to require enough money for a large plant.

(c) Drawbacks A partnership cannot, however, meet the capital requirements of many modern industrial techniques. In many cases these requirements are too enormous to be within the means of a few individuals. In partnership liability is unlimited and sins of one partner visit the others. Risks involved are thus great indeed. And partnership is mortal; it is not a continuous unit. So long as the affairs of a partnership run smoothly it proves strong and virile. Once, however, friction among partners develops the firm is bound to come to grief very soon. In such circumstances the sooner the business unit is dissolved the better it is in the interest of the partners.

### 3 JOINT STOCK ORGANISATION

This form of organisation has been considered as one of the most important economic inventions of modern times. It is indispensable in the case of some industries and profitable in the case of many others. Since industrial revolution use of machinery on a large scale has been in fashion. But use of machinery on a large scale requires large investment and for long periods. Thus, not only are the amounts involved large risks also are very great. Neither individual enterprise nor partnership could provide an answer to this problem. It is only joint stock organisations which can command such large sums.

(a) Structure A corporation or joint stock company is a legal entity with a common seal. The idea of such a company is generally conceived of by a small group of persons called promoters who draft its rules and regulations and submit them to the Registrar of Companies. The latter after approving of them, authorizes the company to raise money up to a specified amount from the public. The amount thus allowed to be raised is called Authorized Capital. Authorized capital is usually much above the immediate, or even ultimate actual requirements. The company issues shares which are purchased by the people. Shareholders are in the real sense owners of the company. The amount, worth of which shares are purchased by the people, is subscribed capital. Purchase of share of a given value implies that the individual concerned has undertaken to subscribe that amount of money towards the share of capital of the company. The company may, however, require only a portion, say, 60 per cent of the total subscribed capital and may call only that proportion from the shareholders. The balance remains with the shareholders as trust money. That part of the subscribed capital which is collected by the company is called paid up capital. Thus when shares are one hundred per cent paid up, subscribed and paid up capitals are equal.

(b) *Types of shares.* There are many kinds of shares. They differ from one another in respect of privilege of voting, right of income-receipt and liabilities for risk. At one end of the hierarchy of shares stand bonds or debentures. Debenture holders have no voting rights, nor are they liable for any losses. They are entitled to a fixed rate of interest and return of their money after a fixed period. They are, therefore, not among the owners of the company; they are only its creditors and their claims are a first charge on the assets of the company.

The next on the list are preference shares. Holders of such shares are also entitled to a given rate of return. The difference between a debenture holder and a preference shareholder is that while the former must be paid his interest at the stipulated rate even if there has been a loss, the latter gets his payment only if the company earns some profits. There is a maximum limit on the return which the preference shareholder may get. His payment may be below that level but not above it. Preference shares may be cumulative. In that case, if the payment made during a year is less than the maximum allowed, the shareholders' claim to the balance is carried over. Voting rights of preference shareholders differ from corporation to corporation.

Ordinary shareholders do not get any payment unless the preference shareholders have received the maximum dividend allowed to them. Even in the case of ordinary shareholders, there is a maximum limit which is generally much higher than that of preference shareholders. If there are no deferred shares the balance of profit is shared between preference shareholders and ordinary shareholders. Otherwise, the excess of profits goes to the holders of deferred shares. Ordinary shareholders are given full voting rights.

Last on the list come deferred shares. These are, as a rule, of lower denomination than other shares. Their claim on profits is valid only when other shareholders have been paid the maximum allowed to them. Thus in normal years or in years of depression, when profits are low, deferred shares earn little. But in periods of high prices and high profits, their earnings are much higher than those of other shareholders. The holders of such shares, thus, take the greatest chance of not receiving any dividend at all. They also take the greatest chance of receiving the highest dividend. The holders of these shares are given full voting rights.

It must be quite obvious that the purpose of introducing such varieties of shares is to accommodate people of different temperaments. People who shun to take risks invest in debentures or preference shares. Venturesome persons purchase deferred shares. The rest who want to invest would buy ordinary shares.

(c) *Control.* Votes allowed to an individual depend on the number of shares he holds but the law places a limit on the maximum number of votes which an individual can cast. Shareholders who have the voting rights elect a board of directors. The directors

elect from among themselves a managing director. The latter looks after the day-to-day affairs of the concern while the board of directors lay down general policies. As it is the shareholders who elect the board of directors, theoretically, the control of the company ultimately vests in them. But shareholders are a large crowd dispersed over a large area and most of them are not much interested in elections. If, therefore, a few persons owning a sizable proportion of shares form a group, they may virtually dominate the company. If no such organized group exists it is the management which emerges all-powerful in the affairs of the company. In any case, there is an effective separation of control and management from ownership.

(d) *Methods of lessening risk.* As has already been pointed out, corporation is a device to command large sums of money for long periods. The risk involved is great. There are, however, certain features of this form of organisation which tend to lessen risks of the individual shareholders. First, shares are saleable. There are large organised markets known as stock exchange. Purchasers of shares are readily available, of course at the market price. Shareholders, who feel that the affairs of the company are not in a happy state, are free to dispose of their shares. The second important feature is that control is separated from ownership. Those people can be appointed to manage the concern who possess requisite qualifications and talents. The most important feature in this respect is the fact of limited liability. Maximum risk of a shareholder is limited by the amount subscribed by him. If a person has purchased a hundred rupee share of the company which is, say, sixty per cent paid up, his maximum losses cannot exceed what he has already paid plus forty rupees that remain to be paid. The holder of a fully paid-up share is not liable to any loss over and above what he has already paid.

(e) *Distinctive features.* The fact of limited liability is a distinctive feature of a joint stock organisation. It encourages people to purchase shares. It makes it possible for corporations to tap savings of a large number of people and thus raise enormous sums. Thus an average corporation is a very much bigger unit than a partnership or an individual enterprise. Another distinctive feature of a corporation is that a shareholder does not bind the company or any other shareholder by his acts. If he indulges in risky adventures or makes hasty agreements, he does not in any manner involve the company in any risk. Still another feature of such an organisation is that withdrawals of individuals from the business are not troublesome. If an individual decides to withdraw, he may sell his shares in the market but the company continues to possess the capital that he owned. Shareholders may, therefore, come and go but companies continue to exist so long as they do not suffer big losses.

(f) *Uses.* The merits of a joint organisation are obvious. It mobilises small savings and aggregates them into sums enough for big business. And such sums continue to be available to it so long as it

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## CHAPTER VIII

### SIZE OF NATIONAL DIVIDEND

#### NATIONAL DIVIDEND AS INDEX OF WELFARE

In Chapter I we decided to use national income or national dividend as one index of economic welfare. Acceptance of national dividend as an index of welfare is open to the following two objections.

*National dividend may not indicate welfare.* National dividend is not a sure index of economic welfare. One difficulty is caused by adaptation and feeling about the marginal wants that have remained unfulfilled. For instance, suppose a group of poor people become rich overnight. Immediately they shall have a feeling of greater satisfaction. But as time goes on and they become habituated to the new set of things, their desires, habits and expectations, all undergo a change. The next unfulfilled wants again begin to stare square. How much satisfaction man derives from his income also depends in many cases, on how much his neighbour is earning. Double the income of a man and simultaneously quadruple the income of his neighbour, he will, in all probability, be sad over what has happened. Yet economic betterment is not just a senseless notion. Standard of living of many large groups is so low and so many necessities of life are denied to them, that an improvement in their standard of living would certainly enhance their welfare. People, who get food which is neither enough nor wholesome, who live in dirty, overcrowded chawls and who wear clothes discarded by others, are sure to be happier if goods available to them increase.

Another difficulty, why national dividend may fail to indicate economic welfare, arises because of the method followed in measuring national dividend. Only those goods and services are reckoned which are sold for money. Consequently, we may sometimes find that national dividend has increased or decreased while economic welfare has not undergone any change. For instance, if toll begins to be charged on bridges or if honorary magistrates begin to be paid some honoraria for their jobs, national dividend in money terms increases, but services provided by the bridges and the honorary magistrates remain as before and hence economic welfare is unchanged. On the other hand, if payment of allowance to members of Parliament were to be discontinued national dividend as measured by us would register a decrease but in fact welfare will not have changed. We may sometimes even find economic welfare having increased while national dividend in money value has diminished. In the case of a gentleman marrying his house maid, a paid labour is converted into an unpaid labour of love, national dividend, therefore, decreases. But economic welfare increases because the housewife does her job more faithfully and is more careful in avoiding wastes than a house-maid.

does not show disastrous losses. But for the system, it would have been impossible to run some of the modern industries like manufacture of automobiles, locomotives, aircraft and steamships. In separating ownership from control, it proves a device for bringing capital and enterprise together. Pockets of the stupid may be overflowing with money and the skulls of the wise may be overflowing with sense and yet the riches of the one and the brains of the other will be rotting unless the two are brought together by the corporation system. By limiting the liability of the shareholder to their subscribed amount, corporation system reduces their worries. Benefits of large-scale production can be fully reaped, and specialisation can be pushed to its most profitable limits.

(g) *Demerits.* The system is not without its demerits. In many cases it reflects a conflict of interests. Directors and managers constantly endeavour to raise their emoluments which implies a reduction in profit margin. They may also be interested more in the prosperity of some other firms which purchase from or sell to, or which borrow from or lend to their concern. Some of the directors are interested more in providing employment and high salaries to their friends and relatives than in earning high profits for their shareholders. Members of the management and directors may thus sacrifice the interests of the concern for their personal gains. Shareholders view such and other dishonest practices with dismay. But they are a loosely spread, disjoined class and can watch it all only as helpless spectators. Secondly, a corporation is a big firm in which hundreds or even thousands have a stake. Many hold shares; others have extended credits to it; still others come to depend on it for custom and employment. Failure of such a firm always causes widespread distress. Thirdly, corporations being large concerns, there are many chances of wastage through oversight. It becomes difficult for the men at the top to probe into every detail. Lastly, corporations are red-tapism ridden. Decisions are slow to make and very often these decisions get over-too-much delayed.

(h) *Conclusion.* Considering together the merits as well as demerits of joint stock organisation and also assuming that management is honest and that shareholders consider them as equal members of the organisation, we may conclude that this system is the only answer which mankind could give to the challenge of economic trends. Taking large-scale requirements as given, this is the only method by which the requirements of capital could be provided. It is also the system by which the question of continuity of the firm could be made independent of the caprices and weaknesses of individuals. No wonder then that joint stock organisation has been called one of the most important economic inventions of modern times. Inventions in machinery, processes, chemicals, means of transport and communications as well as advancement in thought could not be fully harnessed to the service of mankind if corporation system had also not been invented along with them.

In defence of adoption of money-value of national dividend as an index of economic welfare, we can only be apologetic. There is no other measuring-rod than money available to the economist.

*Economic welfare and social welfare.* The manner in which national dividend is produced or consumed may produce one kind of effect on economic welfare and just the opposite kind of effect on non-economic welfare. Slave labour may increase output and hence economic welfare but it reduces non-economic welfare. Same is the case if output is increased by increasing hours of work. Large-scale production has robbed work-people of their liberties, rendering them mere tools to be used or dispensed with at the convenience of others. Co-operative organisations may show less efficiency and profits but smoothness of relations among participants in productive activity is an undoubted gain. Human relations, status attached to the job, harmonies and frictions caused, are as important causes of social welfare as national dividend. Similarly expenditure of incomes may have an elevating or a debasing influence. Expenditure on exhibitions, libraries, parks and religious lectures affects non-economic welfare quite differently from expenditure on drinks, debauchery and the like. Thus a given cause may increase economic welfare and reduce non-economic welfare, or, may diminish the former and increase the latter. In such cases it is difficult to infer effects on total welfare from effects on economic welfare. We, however, assume that a cause which increases economic welfare will also increase total welfare, unless we have special reasons to believe otherwise.

### SOME PRELIMINARIES REGARDING NATIONAL DIVIDEND

Certain preliminaries must be clarified before we discuss actual methods of measuring national dividend. Let us discuss them one by one:—

1. *Period.* Production of goods and services is a continuous process; it goes on round the clock. Throughout the day people are busy working on farms, in factories and markets. Even at night electric plants, water-pumping machines, trains, and three-shift factories continue their non-stop work. Consequently, some goods and services are getting produced every moment. Hence national dividend is not a stock, it is a flow. It is comparable not to capital but to income, not to the quantity of water in a pond but to the flow of water in a stream. A flow, to be described intelligibly, must be related to a period of time. To say that an individual's income is Rs. 200 does not convey any meaning, unless it is also stated whether this is his income per day, per week, per month, or per year. The same is true of national dividend. It is better to decide upon a convenient period and adopt it conventionally universally to make inter-period and inter-country comparisons possible. A year is generally agreed to be a suitable period. There are a number of seasons in a year. In some seasons production and trade activity are intense while

### SIZE OF NATIONAL DIVIDEND

in others they are slack. Hence season-to-season comparisons would not be helpful in fixing trends. And a period longer than a year would be too long. Thus when we speak of national dividend of a country, it invariably relates to some year.

**2 Production income and consumption income** Two major concepts of national income have been upheld. These may be called production income concept and consumption income concept. The former is the concept upheld by Marshall. He defined national dividend as the amounts of goods and services produced during a year in the country. He wrote "The labour and capital of a country, acting on its natural resources, produce annually a certain net aggregate of commodities, material and immaterial, including services of all kinds. This is the true net annual income or revenue of the country."<sup>1</sup> According to consumption income concept, only consumption goods are to be included in national dividend. There are two shades of opinion in regard to this concept. One group believes that once consumption goods are acquired, they constitute income whether they are consumed in the same year or in subsequent years. Others believe that income is received only when consumption goods are actually used. Notwithstanding this hair splitting, we would say that consumption income definition of national dividend would include only those goods and services in it which are consumed during the year.

If the capital equipment were to remain unchanged, the two definitions of national dividend would refer to the same sums. Generally, capital equipment has been increasing in every country. In exceptional years there has been some capital consumption. Hence it is rather rare that the two definitions refer to the same sums. In making a choice between the two definitions refer to the same sums. In use to which the concept is to be put. If the purpose is to compare economic welfare actually enjoyed by the community during any two years, consumption income concept is preferable. If, on the other hand, the purpose is to find how a given cause or policy has influenced economic welfare, production income concept is appropriate. It is this latter that is Marshall's concept, which is accepted for purposes of general economic analysis.

We have however to ensure that nothing is counted more than once. If sugar-cane is included in agricultural output, from the value of sugar included in manufactures value of sugar cane must be deducted. National dividend is composed of the "final products" turned out during the year where the term 'final product' refers to all those items of output which have not been embodied into any further commodity.

**3 Inclusion of services** Some Hungarian and Indian economists have held the opinion that while goods of all sorts produced during a year may be included in national dividend, direct services may be

<sup>1</sup> Principles Of Economics (8th Ed.), p. 523

excluded. One argument given is that direct services result only in such utilities as advice, guidance, knowledge, relief, protection, etc., which being psychic, are non-measurable. Another argument is that the same kinds of services have different money values. To this latter point we may reply that even the same commodities may have different prices in different markets within the country. We do not exclude commodities for that reason, then why exclude services? As regards the non-measurability of the results of service, we may reply that in the last resort goods also render services which give satisfactions. Non-measurability of "effects" of the use of goods is as obvious and real as of the use of direct services. If we include the one, we must also include the other.

Another objection is that in the case of some direct services, like those of a private secretary, it is not always possible to say what part of the service is rendered to the person of the employer and what part of it towards his business. The latter is a cost of the output, and hence it is only the former which is a net addition to the income of the community. In reply, it may be asked if such a service differs in any respect from the motor car of a factory owner which may be used partly for business purposes and partly for his and his family's pleasure. Both represent border-line cases and raise difficulties of quite the same variety.

Still another objection is that it is illogical to take account of these services which are sold for money and exclude those which are offered gratis or out of affection. There is no doubt a distinction between these two kinds of services. In the case of services rendered for money there is a psychological cost, in the other case there is none. The latter kinds of services are rendered free of cost, the former will be offered only in response to a promise of payment. And, lastly, if we exclude services which are not rendered for money, we also exclude commodities which are not offered for sale against money.

*4. Foreign trade.* The fact of foreign trade introduces another factor. In the case of a country having no trade contacts with the outside world, the annual output of the country is the only item in national dividend. But when goods are exported, less goods remain for the community during the year. On the other hand, imports from other countries increase the flow of goods and services available. In computing national dividend, therefore, exports are excluded from the annual domestic output and imports are added to it.

*5. Depreciation.* Every year starts with some amount of machinery, houses, land-holdings of given qualities, cattle and other such assets, which wear out or deteriorate in quality in the process of producing goods. At the end of the year, machinery and houses and cattle become older and land becomes poorer in content. Provision must be made to make up this wear and tear, that is, for the requisite repair and replacement. This provision is called maintenance of capital intact. Deductions from total or gross output on account of land equal the cost of fertilisers to rebuild the fertility lost under

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the crops during the year. Deductions on account of machinery, housing, factory buildings and cattle depend on their respective lengths of life. If a machinery would last twenty years, five per cent of its value is the annual replacement charge in addition to the repair charges, if any.

In this respect wear and tear refers to depreciation resulting from the productive process. In addition to that, depreciation on account of weathering as well as losses due to accidents (like fire) incidental to production should also be provided for. But losses on account of natural calamities like earthquake or flood cannot be included under the head of depreciation of capital. It may also be pointed out that as provision is to be made for replacement of capital, price prevailing at the time of replacement and not the money-value at which an asset was purchased, is relevant.

### CHANGE IN THE SIZE OF NATIONAL INCOME

What do we understand by national dividend being larger or smaller? In other words, when can we say that the national dividend has increased or decreased?

*One commodity national dividend* If national dividend were to consist of one commodity only, increases and decreases in its size would be easy to detect. All that we have to do is to define a unit of the commodity. If the number of units produced in one year is larger than the number of units produced in another year, national dividend in the former year is larger and vice versa. Not only that. It would also be possible to say how much larger it is. Similarly, comparisons of national dividend between countries could also be made.

*Similar changes in constituents of national dividend* There are in fact a larger number of commodities and services to be reckoned. If the production of all commodities and services were to increase or decrease together, then also it could conveniently be found out whether national dividend had increased or decreased. If different commodities and services varied in equal proportions, we would be in a position to speak of percentage changes in national dividend. If the output of different goods changed similarly though unequally, we could still be sure of in what direction the national dividend had changed. If the output of some goods increased or decreased while that of others did not change, inference with respect to the kind of change in the national dividend would still be obvious. In the real world, however, we find production of some goods and services having increased and of others having decreased.

*Common denominator* Suppose that in comparison between two periods there has been a change in the output of only two commodities, say, butter and beer. The output of butter has diminished while that of beer has increased. If we were to apply moral standard, we could immediately say that the change has been for the worse. But moral standards are irrelevant in economic discussions.

Comparison between the loss of butter and gain of beer could be possible if both could be translated into some common denominator. Economics fortunately possesses such a denominator and that is money-value in the market. If valued at their respective market prices, butter lost carries a value higher than that of beer gained, national dividend has declined, and *vice versa*. Goods and services are valued at their market prices because the prices indicate marginal utilities. From these values we can draw inferences about economic welfare.

*Difficulties.* But in adopting the method of converting all goods into the common denominator of money, many difficulties crop up. First, we can evaluate only those goods and services which have a market price. Public services like defence, peace, justice, etc., have no market price and hence are difficult to evaluate. At best such services can be valued at their costs to the government. This introduces inconsistency in that some items are valued at their market rates and others at costs. Secondly, money as a measure is undependable, because a unit of money (say, a rupee) has a different value for different persons. A villager in India might think of the purchasing power of rupee in terms of khaddar while a townsman may do that in terms of muslin. In spite of these difficulties we adopt the measure because none other is available.

Purchasing power of money also changes with time. Consequently, the value of national dividend in terms of money has to be corrected according as prices have risen or fallen. This, however, is not enough. Not only do the prices change, proportions of commodities purchased also change. Also, new commodities might enter into consumption and some of the old ones might disappear. The difficulties which thus arise are those which we confront when forming index numbers and have been collectively called the "index number problem." We discuss the formation of index numbers in a later chapter and there we shall suggest the possible solutions of these difficulties.<sup>2</sup>

#### METHODS OF MEASURING NATIONAL DIVIDEND

*Choice of the total.* National dividend refers to aggregate of values of goods and services turned out during a year (measured without duplication). Hence national dividend is a total. There are, however, many kinds of totals and a choice has to be made from among these. First, there is the total called Gross National Product, which includes goods and services flowing to the consumer, those utilised by the Government, net foreign investment, increase in stocks held, and repair and output of capital goods. Obviously, items like foreign investment and increase in stocks may be negative. As we have already decided, deductions must be made from this total on account of depreciation or deterioration of buildings, machinery and land to get a net figures. This will give us Net National Product.

Magnitude of the total also depends upon the choice of prices. There are two kinds of prices—one excluding indirect taxes. other

including them. To evaluate goods on the basis of prices excluding indirect taxes, we have to sum up the payments made to factors of production which were employed to produce them. This total is national dividend at factor cost. If we make subtraction from it for depreciation of capital, we get a total which may be called National Income. If, on the other hand, net addition of goods and services is valued on the basis of market prices (which include indirect taxes), we arrive at Net National Product. The figure for Net National Product is lower than that of Gross National Product by the amount of depreciation of capital. However, Net National Product includes indirect taxes, which National Income does not. These relationships may be summed up as under —

$$\begin{aligned}\text{Gross National Product} &= \text{Net National Product} + \text{Capital Depreciation} \\ &= \text{National Income} + \text{Indirect Taxes} + \text{Capital depreciation}\end{aligned}$$

*Sub totals.* Taking the fact of exclusion of depreciation as a settled affair, we are left with Net National Product and National Income. If to the latter we add indirect taxes, we get the former. Method to be adopted for measuring national dividend of a country depends on which of these two totals is sought to be computed. And the choice of the total itself rests on the purpose for which estimate is being made. An opinion prevails in some quarters that more important than the choice of the total is that relevant facts should be collected and should be presented in such a form that anybody can construct either of the totals from these facts. If one of these is known, the other can be calculated, if the extent of indirect taxes is also known. In fact, detailed information and sub-totals are more important than that. While the totals give an idea of where the economy stands, or which way it is going, it is the detailed information collected about various sectors which helps to compare magnitudes of incomes, expenditure, outputs and savings of various groups. These throw light on productive efficiencies levels and structures of different incomes and character of expenditures, etc.

*The procedure.* Net National Product can be assessed at the point of production. The sum of net outputs of the several "economic sectors" of the productive system would give this total. Net National Income can be measured at the points where incomes arise, or at the points of incomes-utilisation. In the latter case not only consumer's expenditure but also government purchases as well as net outlay on capital goods must be included. If we value net outputs at market prices and add indirect taxes to individual incomes, then figures for net outputs, income-flows and final expenditures will be identical.

In practice generally two methods have been adopted. These are called the Incomes Method and Inventory Method. The latter is also called the Census of Production method. The essential of Income Method lies in finding out incomes of individuals or of various groups and adding them up to arrive at the total. As the various incomes are earned as interest, wages, rents or profits, the total thus arrived at is the national dividend at factor-cost. Inventory method involves making a list of goods and services produced during the year,

evaluating them at market prices and making deductions for depreciation. This gives the Net National Product. In some cases, as in India, statistical data may be inadequate in certain respects and a synthesis of both these methods may have to be adopted. It is in such cases that the investigator has to be wary of pitfalls. It is in possibilities of double counting are great. Also, he must ensure at each step that quantities and values used are relevant to the total.

We have to make certain that the estimates are comparable. For that purpose, definitions adopted at different times and places should be the same. Moreover, to keep the difference between Net National Product and National Income exactly at indirect taxes, certain paradoxical steps become necessary.

Theoretically, no rigid rules can be laid down. Pigou suggests in respect of census of production method that only those goods and services are to be included which are actually brought to the market and sold for a price. But earlier in his book he defines economic welfare as that part of social welfare which can be brought into relation with the measuring-rod of money. In the light of this, that part of the output of farms and factories which is not sold but is sellable should be included in national dividend. Nevertheless, so that figures in the two methods ultimately tally, only these goods and services are included which have actually been sold in the market for money. That part of the output, which the producers' family consumes or which is bartered, is not reckoned. Similarly, services of mothers, wives and friends are not taken account of.

In the income method, only those incomes are included which are payments against goods and services. Incomes in the nature of gifts (e. g. pocket allowance by a father to his son) are to be excluded. There is a difference of opinion regarding old-age pensions. Some people consider them to be postponed payment for past services and hence advise their exclusion from present incomes. Dr. V. K. R. V. Rao considers them to be payment for the experience and matured judgment of the retired persons and favours their inclusion in present incomes. All, however, agree on exclusion of war-pensions and interest on war-loans.

Measurement of national dividend is thus beset with conceptual difficulties. In addition, there are some practical difficulties. Such difficulties are all the greater in a country like India. In this country output, which is either consumed directly or is bartered, forms a significant proportion of the total output. Pigovian formula of ignoring that which is not actually sold in the market, would make national income statistics of India a very imperfect index of welfare. Moreover, a vast majority of the population are illiterate and many of them do not have any idea of the quantity and value of their own output and do not keep any accounts. Guess work enters a large part of the field covered. Occupational specialisation is imperfect. Statistics available are limited. Most of the statistics obtained are guesses of patwaris and others of his sort—they have a limited

## CHAPTER IV

# MAXIMISING PRODUCTION—PRODUCTIVITY OF FACTORS

### ECONOMIC PRODUCTIVENESS

Let us start with taking quantities of factors of production as given and study the conditions which will help to maximise production. Aggregate production depends on the economic productiveness of these factors. We shall first explain the meaning of the term 'economic productiveness'.

*Technical Productiveness* Technical productiveness refers to the physical output per unit of time. If labourer *A* can do twice as much work in a given time as labourer *B*—or, which comes to the same thing, labourer *A* can do a given job in half as much time as labourer *B*,—then the former is technically twice as productive as the latter. Similarly suppose a handloom can turn out twenty yards of cloth in a working day while a power loom can turn out eighty yards, then technical productiveness of a power loom is four times that of a handloom.

*Other constituents of economic productiveness* Economic productiveness is reckoned in terms of costs and prices. In a capitalist state social decisions regarding methods of production and size of the output are mere aggregates of individual decisions. In such a state, individual producers take market valuation as the basis of their assessments. Cost of a labourer to an individual producer is the wages which the labourer can command in the market and which therefore, the producer has to pay if he is to avail of the services of that labourer. Similarly the cost of a machine to a producer is the price for which that machine can be purchased in the market.

Suppose of the two labourers *A* and *B*, the former is technically twice as productive as the latter. Further suppose that both can be persuaded to work for equal wages. In such a case there is no difference between economic productiveness and technical productiveness of the two. If, however, the rate of wages at which *A* will work is twice as high as that at which *B* will be prepared to work, then to the producer both are equally costly. Economic productiveness of the two is equal even though technical productiveness of *A* is twice that of *B*.

In comparing economic productiveness of two machines, the producer takes into account their respective technical productiveness, market prices of the two as well as the relative lengths of their "lives". In fact he must go a step further. Of course, if the producer is one among a very large number of producers so that his total output forms an insignificant proportion of the aggregate output, variations

in his individual output will not influence the market price. In such a case price is a given factor. If, however, the number of producers is small, variations in his output influence the market price. If he uses the machine which is technically more productive, his output will increase and he can sell the larger output only at a lower price. He must take into account the effect on market price of replacement of one machine by another. For instance, if he replaces handlooms by power-looms, his unit of production becomes larger and hence his output increases. As he places the larger amount for sale in the market, price falls. Loss on account of this fall in price must be placed on the debit side of the balance-sheet of the power-looms.

"Roundabout" methods of production involve larger investments and are lengthy. More capital is thus locked up and for a longer period. Interest payments thus increase. Moreover, longer period increases storage costs as well as losses on account of deterioration of the commodity.

Thus while assessing relative productiveness of two methods of production which are not equally "roundabout," the economist as well as the producer takes into account the following factors :—

- (1) Technical productiveness of the two methods ;
- (2) Relative costs of machinery and labour ;
- (3) Costs on account of interest, storage and deterioration ;
- (4) Effects on price, if any, of producing larger output by the more "roundabout" method.

#### EFFICIENCY OF LABOUR

National income or aggregate output depends on the proportion of working population to total population. Given the total population and the proportion of working population to it, aggregate output, as also income per head, is determined by output per worker, which in its turn is a function of efficiency of labour. Efficiency of labour is defined as the ability and willingness of a worker to do his job.

*Will to work.* A very talented man will not produce much if he does not give to his work the requisite amount of attention and interest. Output due to him will be very low if his hands are at the implements and his mind elsewhere. Worry of any sort distracts the minds of the worker from his work. It is thus essential that he is cheerful. Every one is given a job which he likes. Treatment of the employer and the environments of the place of work keep him in proper spirits. Also, he can be expected to put in his best if he hopes to be rewarded for merits of his work. A spirit of competition may be introduced by announcing rewards or prizes for good work. However, to rid the worker of his worries, the most important measure is to pay him well. His wages must be high enough to give him and his dependents a reasonable standard of living. It is now almost universally agreed that well-paid labour is cheap labour. If the employer pays the worker well and keeps him happy, the latter repays him by doing his work with a zest.

*Ability to Work* Yet the most willing workers cannot do much if he does not possess the ability to work. Lower productive power of groups of workers is sometimes attributed to factors which are pronounced as incurable. About some races it is said that they have 'the ignorance of ages compressed into their minds' and that the best attempts at educating them or otherwise sharpening their intellect are bound to fail. But history does not in any manner support this contention. There may be differences of natural talents among individuals but to condemn a whole race as devoid of such talents is certainly mischievous. A factor, which appears to be incurable, is physical environment, especially climate. Extremes of climate, whether hot or cold, are destructive of efficiency. Very hot climate is adverse for health as well. Of course in the modern world of advanced scientific devices, intensities of heat and cold can be reduced inside the factories. Yet, air conditioning devices are costly. Moreover, in his movements outside the factory the worker cannot be so much protected. Bracing cold climate is most suitable for hard work.

Ability to work of a labourer depends mainly on three factors. First, whether he has acquired proper physical and mental equipment. Second, whether he has been allotted the right job. Third, whether he has been given the right kinds of tools.

Physical equipment refers to his state of health. Proper mental equipment is a question of education. Of course, some jobs require a natural aptitude. Everyone cannot make a good painter or a good singer. But while unbluntness of fingers or a sweet voice are God-given gifts, a knowledge of principles of painting or of music may be required. Shortcomings of natural gifts can to some extent be made up by acquired knowledge. General as well as technical (or commercial) education, both, are essential for efficiency. Jobs like those of salesmen and factory managers seem to require general smartness and intelligent approach only. But even these cannot properly be done without some amount of technical knowledge. A salesman who does not know the uses to which his wares can be put or the materials of which they are made, cannot do well. Similarly, a factor manager will not be successful if he does not have some idea of the technique of various processes which his workers handle. On the other hand, those jobs, which appear to be mechanical and require technical knowledge only, on many occasions, demand some general intelligence on the part of the worker.

Right allotment of jobs to the workers depends on the ability of the entrepreneur. He should also have received technical as well as general education. Given that the entrepreneur knows his job, allotment of work depends on division of labour, location of industry and mobility of labour. Similarly, provision of proper tools to the worker, brings in the question of use of machines. All these are very important, and each one of them deserves to be studied in detail.

## DIVISION OF LABOUR

*Meaning.* So important is division of labour to maximising production of wealth that Adam Smith selected it as the first topic for discussion in his "Wealth Of Nations." Broadly speaking, division of labour means specialisation. Division of labour may be simple or complex. Simple division of labour means specialisation in the production of a commodity. Imagine a society where there is only simple division of labour but it exists in a perfect form. In such a society every worker is a producer of one commodity only. He may do his work in the company of other workers and may even work under a common supervision along with them. Yet he works quite independently of his fellow workers and does the whole job in converting the raw material into finished product.

Complex division of labour is specialisation in an operation or process. The production of a commodity is broken up into a number of operations and each operation is assigned to a separate worker or group of workers. In fact, complex division may take either of the two forms. Each operation may be a complete process or stage, or it may be a sub-process or a tiny mechanical operation for which a limb is used repeatedly in a given way. If shoe-making is divided into making the lower, making the uppers, stitching, the two, polishing, and packing, this will be division into processes. But if these processes are further sub-divided so that each man's work consists of "hits" or "strokes," this would be division into sub-processes. When each "sub-process" is such that it cannot be further sub-divided, complex division of labour is said to be complete or perfect.

*Effect on productivity of labour.* Division of labour helps to increase production by increasing productivity of labour and by reducing costs in several ways. The entrepreneur finds himself in a position to assign jobs in such a manner that physical and mental merits of workers are fully exploited while their defects of body or mind are least suffering. If a man has a good memory, he may be made a record-keeper. Another one who has nimble fingers will do well as a typist. On the other hand, a blind man may be given a job in which sight has no part to play. Similarly, a lame person may work on a machine which requires the use of hands only.

Specialisation implies doing the same job over and over again. Experience is nothing else than becoming expert by repetition. Limbs, eyes, and ears of the worker get so trained for the job that they move and work with ease. Thus division of labour makes it possible not only to make best use of special aptitudes of individuals, it also proves instrumental in further development of such aptitudes. Moreover, as Adam Smith pointed out, change-over from one process to another involves sauntering and waste of time. Specialisation saves that part of labour-time.

Division of labour breaks up the process of production into simple ions, which are easy to learn. Movement from one job to

another is thus facilitated. This mobility of labour, as we shall presently see, enhances productive power of labour.

Other reductions in costs Division of labour reduces costs in many other ways. It economises tools and implements. When there is no division of labour, whatsoever, every man produces every thing required by him or his family. Obviously then every one must keep all kinds of tools. As simple division of labour is introduced, every man requires tools for the production of one commodity only. With complex division of labour, too's per head are the tools of a single operation. Less capital is thus blocked in tools and more is released for either giving employment to more labourers or for improving the quality of tools.

Specialisation of labour leads to specialisation of other factors Suppose A possesses a piece of land which is more suited to produce wheat than cotton while a piece of land owned by B is better suited for cotton. When there is no division of labour both have to produce wheat as well as cotton for their respective requirements. A has to grow cotton on his 'cotton land' while B has to grow wheat on his 'cotton land'. When specialisation is introduced, not only do A and B concentrate on one commodity only, their respective lands also go under the crops for which they are suitable.

Specialisation can be extended to the sphere of research. Those who engage themselves in this task devote undivided thought to it. This is conducive to technical inventions. Moreover, division of labour breaks up processes into simple operations. And it is always easier to devise machines which can perform simple operations than to devise machines for performing lengthy, complicated and multiple jobs. Also, as every worker concentrates on a single task, he is more apt to think of and find out newer and superior methods of doing the same task. In all these ways division of labour encourages inventions, increases national income, and brings about economic progress.

**Physical limitation** Division of labour increases productivity far as possible. There are however, certain limitations on its extension. One is physical limitation. It operates when a process has become so simple that it can be performed by a single movement of the limb. Thus it is physically impossible, or at least foolish, to further break up the process of hammering or the use of axe.

**Limitation of co-ordination** A second one is the limitation of co-ordination. Co-ordination is said to exist when output at every stage equals input at the next stage. Suppose the making of shoes in a factory is divided into five processes—making of "uppers," "lowers," stitching "uppers" and "lowers," polishing, and packing. Principle of co-ordination demands that in every hour,

$$\frac{\text{Number of 'lowers' produced}}{\text{Number of 'uppers' produced}} = \frac{\text{Number of 'uppers' packed}}{\text{Number of shoes packed}} = \frac{\text{Number of shoes packed}}{\text{Number of shoes stitched}}$$

Complex division of labour yields its full benefit only if there is co-ordination between different processes, because, otherwise, there will be a waste of time at one stage or the other. Now, every time a process is further split into two or more sub-processes, number of persons engaged in every process has to be altered to ensure co-ordination. Co-ordination is difficult to achieve when the number of processes is large. Once it has been realised in a large factory, the management fights shy of disturbing the arrangement as co-ordination would be difficult to achieve in the new set-up. Hence the limitation on further extension of division of labour in such ventures.

*Economic limitation.* The most important limitation on division of labour, however, is what may be called "economic limitation." It may manifest itself on the side of money-costs. Extension of complex division of labour implies increase in the number of processes which very often also implies extension in the size of production-unit. This incidently increases the firm's demand for factors of production. If larger amounts of factors of production can be attracted only by paying higher prices, technical gains of division of labour may be more than offset by the higher money costs of factors of production. Division of labour in these circumstances will not be extended.

Economic limitation may also show itself in the marketing of the product. This limitation was specifically mentioned by Adam Smith. "Division of labour is limited by the extent of the market," he wrote. Sales depend on price. A larger quantity can be sold only at a lower price. When demand is less elastic, a larger reduction in price is necessary for a small extension in total sale. In such cases market is limited. Limited market, therefore, means rigid market, a market where elasticity of demand for the product is low. As has already been pointed out, extension of complex division of labour implies extension in the size of the production unit, i.e., increase in the total output. Of course the larger output is produced at lower costs, but it has also to be sold at a lower price. If the market is rigid loss on account of reduction in price may exceed the gain on the side of costs. In these circumstances division of labour will not be extended.

Limitation of the market is as much operative on simple division of labour as on complex division of labour. A shoe-maker in a village may be confronted with a limited market. If he produces more shoes, he may be able to sell them at a much lower price which may reduce his total profit. He would, then, rather produce fewer shoes and sell them at a higher price and thus earn maximum profit. But this "maximum profit" may not be enough to make his both ends meet. He will prefer to devote his extra time to some other job and earn more rather than employ his whole time in shoe-making. He cannot specialise in the production of shoes only.

#### LOCALISATION OF INDUSTRY

*Pulls upon a new industry* One aim of the producer is to minimise a factor which helps him towards that end is that he locates

his factory at a place which offers maximum facilities. Suppose the producer, we are speaking of, is a pioneer of the industry in the country. That is, the industry does not already exist in the country and he is the first to put up a production unit. A number of places will suggest themselves to him. Each one of these places will promise some facilities. In other words, each one of these places pulls the proposed factory to itself. The force in these "pull's" is unequal. He will decide in favour of that place where the "pull" is the strongest, i.e., which promises the maximum advantage.

The "pull" which a place exerts upon an industry is made up of a number of components. It is instructive to study these components.

**Raw materials and market.** Availability of raw materials is an important advantage which a place may offer. If the industry is away from the centre which supplies raw materials, expenses of transportation will add to the cost of the product. Similarly if it is located away from the market carriage of the product to the market will involve costs of transportation. If possible, the industry would settle at a place where the requisite materials are available and product is easy to sell. When sources of materials are distant from the markets, decision has to be made in favour of the one or the other. Whether the choice will be in favour of nearness to the materials or to the market, depends upon the nature of the materials as well as of the product. For instance, sugarcane loses weight in the manufacture of sugar. Fuels do not add weight to the product. Iron ore is heavier than steel. In all such cases products are cheaper to transport than materials. The industry would prefer to be near the sources of materials. On the other hand in some cases finished product is more difficult to transport than the materials used. Crockery, glass products, and pottery are more difficult to pack and transport than their raw materials. In such cases the industry tends to be nearer to the market. It may be said that in modern times when means of transport are swift, cheap, and easily accessible, and methods of packing are fool proof, importance of availability of raw materials and of nearness of market is not more great. That is true to some extent. But after all transport involves costs as well as risks of breakage and loss. More important than that is the possibility that transport system might sometimes be upset. In such an event, if the industry is away from the raw materials or fuel labour and machinery will remain idle till the transport system is a work again. And, if it is away from the market, stocks will pile up and production may have to be stopped for some time. In either case there is a loss of wages as well as interest.

**Availability of power.** Modern age is machine age. Industry makes use of inventions. The most important invention, of which almost every industry makes use is the wheel. And the central problem of every industry is to revolve the wheel. That requires power. Availability of power is, therefore, an all important consideration in the localisation of an industry. Usual sources of power today are coal, oil and electricity. Coal is heavy. Cost of transporting it is

high. Hence if coal is to be used, the industry will tend to be nearer its source of supply. Oil can be carried over distances but there is the consideration that transport system may be upset or overcrowded. Even a pipeline can be laid from the point of its production to the place of requirement. Initial costs, however, are high if a pipeline is laid. Similarly, electricity can be carried over long distances but here also initial costs are high. Its voltage has to be raised very high before it can be so done. Also, poles have to be fixed and wires laid. In view of all these considerations availability of power is a great attraction to every industry.

*Labour and capital.* Labour and capital are essential requirements of every industry. Not only should labour of different grades be available, it should preferably be cheap. The pioneers of industry have to make sure that climate of the place is not very unhealthy, that housing problem is not very acute and that cost of living is not very high. Availability of cheap labour has been one important reason why in the present century a large number of cotton mills were installed in Ahmedabad in preference to Bombay. Similarly, financial accommodation is required by concerns every now and then. Absence of banks or bank branches and other financial agencies would be a handicap.

*Suitable climate.* If climate is unhealthy, labour would either not stay or demand a heavy price for so doing. If it is extremely hot or extremely cold, efficiency would be low. Also, industry itself may require a certain kind of climate. For instance, for cotton industry moisture in the air is essential, otherwise artificial humidity has to be produced which raises costs. Thus suitable climate also is a potent constituent of the pull.

*Momentum of early start.* Such are the factors which a pioneer would consider for deciding upon the location of his unit of production. Now, suppose an industry has already been established at a place. In course of time an "atmosphere", suitable to its existence, gets created. Subsidiary industries may spring up and training institutions may be started. The place comes to acquire a reputation which attracts workers, materials-sellers, and customers of product. Even if a new place is afterwards discovered which offers better initial advantages of the types enumerated above, a new entrant would still prefer the original centre of the industry. Advantages acquired by the original centre have been summed up in the phrase "momentum of an early start." It is an all-important consideration and easily scores over other considerations. Hence while a pioneer in a field attaches importance to availability of materials, power, market, labour, capital, and suitable climate, a new entrant in an already established industry gives overwhelming importance to suitable atmosphere created by an early start.

*The question of comparative advantage.* It has been argued that advantages in respect of raw materials, market, power, labour-power finance, etc., are often not enough to explain the location of an

industry.<sup>1</sup> It is said that when an area is well suited for a number of industries, only such industry (or industries) would be located there in which the area has comparatively greater advantages. In other words, location of an industry can often be explained only by comparative advantage rather than by absolute advantage. Area A may be better suited than area B in the production of  $x$ . Area A may have still greater advantages in the production of  $y$ . In such a case industry  $y$  will be located in area A and  $x$  may be produced in the area B. Location of the industry  $x$  in area B can then be explained only by the fact that area B has comparatively less disadvantage in its production.

The fact, however, is that in the area 1 comparative advantage in the production of  $y$  will manifest itself in the form of disadvantages for the industry  $x$ . When industry  $y$  has been established labour may become dear, housing difficulties might arise, transport system may be overcrowded, etc. etc. In view of all these, area B comes to have more advantages in the production of  $x$  than area A. Hence the fact of comparative advantage need not be raised as an extra consideration.

#### MOBILITY OF FACTORS

*Importance of mobility.* While speaking of the measurement of national dividend we pointed out that market price as an indicator of importance of the product has this merit that it equals marginal utility. If there is a change in tastes utility or want satisfying power of some goods rises and of others falls. This shift in want satisfying power manifests itself in the form of a change in prices. Prices of more wanted goods rise and of the less wanted ones falls. Prices of more welfare is to be increased, they have to be provided with more of those goods of which the utility (or better still, marginal utility) has risen. Shifting factors from the production of less wanted commodities to the production of more wanted ones will increase available utilities which is tantamount to an increase in wealth produced. But shifting is possible only if factors of production are mobile. Hence the extent to which production can be adjusted to changes in demand depends on the extent to which factors of production can be transferred to other places and uses and upon the time required to effect such a change.

*Meaning of mobility.* A factor of production is said to be mobile if it moves from one place to another in response to better prospects of earning. Movement from one place to another in response to geographical mobility, movement between occupations for the same or similar jobs is horizontal mobility, and movement for the grade to a higher or lower grade in the same or a different from one is vertical mobility. Absence of geographical mobility is called immobility, while absence of horizontal or vertical mobility is called specificity. As stated above, mobility of factors of production ensures

<sup>1</sup> Cf. G. K. Meekos, *Introduction To Economics* (Second Edition), pp. 77-78 and 83-84.

that they would be used at those places and for those purposes where they can produce maximum exchange-value, that is, where they can make maximum contribution to economic welfare. If factors are immobile or specific, occasions might arise when quantities of a factor are rotting at one place for want of use, while at another place industries are starved of it. Land is geographically immobile. Consequently, there are large uninhabited waste tracts which cannot be carried to overcrowded areas of industrial cities. Similarly, in India we have a host of agricultural workers unemployed or underemployed, while the country is short of doctors and engineers. This is so because movement of labour from agriculture to skilled professions involves training, facilities of for which are meagre. Situations are also conceivable when a country has too many surgeons and too few lawyers, or too many masons and too few barbers, etc. For, mobility of labour from one skilled profession to another is low.

*Mobility of labour.* Mobility of labour, whether it be geographical, horizontal or vertical, depends on the labourer's will as well as his ability to shift. Differences in languages and customs, rigidity of castes, joint family system, affection for the surroundings of birth-place, etc., reduce a worker's will to move to distant places. Such factors, therefore, hinder geographical mobility of labour. On the other hand, spread of education, feelings of nationalism, and weakening of family ties and caste rigidities encourage mobility. Given the will to move, actual mobility depends on the ability to move. Efficient means of transport are a basic requirement. Also, movement involves costs of transport. Cheapness of means of transport is helpful to mobility. Occupations which demand a natural aptitude are closed to those who do not possess one. Similarly, entrance to certain occupations must be preceded by a long period of training and a large investment as expenses of training or as entrance fees or as fees for qualifying tests. Such factors hinder horizontal mobility. Yet, a number of occupations have similar jobs. Typists, accountants and the like are required in all industries. Age is also a determinant of mobility. Older people have long been in an occupation and are reluctant to change over. Younger men are, however enterprising and

prepared to take risks. Hence mobility of labour in a country depends on the proportion of young workers to the total working population. Dynamic nature of the distribution of working population among various occupations is helpful to mobility. In every nation some people are always retiring and new entrants are in. Number of new entrants can be adjusted according as the rates of various occupations vary. Reshuffle is thus easier than usually imagined. Movements from one post to the next post depend on the extent of knowledge required for the higher post. An engineer has to be much better qualified than an overseer. Qualifications essential for the post of a head clerk are not very different from those required for the post of a senior clerk. Vertical mobility is easier in cases of the latter type. Vertical mobility has been very much facilitated by division of labour. As jobs have been fixed, learning the next higher job presents not much difficulty.

**Mobility of land.** Land appears to be immobile and specific—immobile because it cannot be carried and specific because chemical contents of the soil and climatic conditions make it suitable for the production of certain specific crops. Things, however, are even here not as hopeless as that. Of course, land cannot be physically carried from one place to another but area is not as important as productivity. Productivity can be increased by improvements and we may invest more capital on one piece of land rather than another. Similarly, as improvements wear out, they may not be restored. Hence productivity of different pieces of land can be increased or decreased. Mines cannot be transported but minerals can be. Even rivers can be diverted. Climate however, is a factor of which mobility is nil. Few pieces of land are completely specific for a single use. Most lands can be put to a number of uses. Of course horizontal mobility of mines is zero but some minerals can be put to a number of uses.

**Mobility of capital.** Capital in money economies first comes into existence in the form of funds. Funds are then invested and take the shapes of raw materials, fuels, buildings and machinery. Funds are fluid and can flow into any use. Their mobility is the highest. Raw materials and fuels can be carried from one place to another. Even their uses may be changed. Cotton may be used for producing shirting or long cloth. Fuel may be used in one industry or another. Buildings cannot be carried to other places. Geographical movement of machinery involves high costs of transport. Geographical mobility of buildings and machinery however becomes easier because of the fact that their owners set aside every year sums of money for their ultimate replacement. Such sums are called depreciation funds. As we have already said, funds are the most mobile of all factors. With their aid new buildings can be erected and new machines can be installed at places where they are more needed. Horizontal mobility of buildings is much greater than that of machinery. While plant, at a rule can at the most change the quality of the commodity produced, buildings may be used for entirely different purposes. A hospital may be converted into a college. Or, a factory building with minor alterations may become a community hall.

**Conclusion.** Our conclusion is that mobility of factors if production is greater than what appears to be at first sight. Mobility of labour is really high when national feeling is highly developed. Means of transport are cheap and efficient, and population is expanding. In a progressive economy, mobility of land and capital stands high because in such an economy saving and investment are fast increasing. New savings flow in the direction of greatest promise.

#### USE OF MACHINERY

**Machinery and fact.** A device which saves labour or time is called a machine. Modern age has been called the age of machinery.<sup>2</sup>

<sup>2</sup> For this reason the word *factory* is an appropriate expression indeed to describe the modern world.

Use of machinery in the modern world is so extensive that it is impossible to conceive of an economy, present or future, in which no machines, whatever, would be employed. An essential concomitant of the use of machine is the use of power. This power may be supplied by man himself. Thus *charkha* is a machine run by hands. However, the word machine is generally used to mean a device worked by power supplied by non-human factors. Wind and water have been in extensive use in the past but now their use is rather rare. Coal, oil and electricity are the most important sources of power today. Atomic energy bids fair to become the main source of power in the near future.

*Machinery and production.* How far and in what ways does use of machinery help production of wealth? In the first place, there are a large number of things in use in the modern world which it would be well-nigh impossible to produce without the aid of machines. In the case of some commodities use of machines is essential because the mass of matter to be handled is huge. Steamships, railway engines and aeroplanes are good examples of such commodities. In other cases, it is only machines which can maintain the level of accuracy which are required. All precision instruments like voltmeter, watches, etc., and replaceable components of standardized goods, are possible to produce only with the aid of machinery. Secondly, the very fact that a machine is labour-saving or time-saving device implies a cheaper as well as a speedier production of goods. That machine-made goods are cheaper than hand-made goods is amply borne out by history. Hand-made cloth, paper, matches and hundreds of other cottage industries have known their doom at the hands of competition from machine-made goods. And how speedy is machine production the requirement of newspapers in the printing press is meeting preferable to avoid direct touch by hand in the production of some commodities. In some cases the materials handled are injurious. In other cases touch by hand would mar the beauty or purity of products. There are a large number of medicines which must not be touched by hand if their unseptic character is to be maintained. Food products prepared by some firms are preferred because they are "untouched by hand".

Technique of many machines is similar in many respects. Consequently, if a technician has worked on one machine, he can easily tackle or can quickly learn to tackle many other machines. Learning a new craft is more difficult than learning the handling of a new machine. It is, therefore, easier for a technician than for a craftsman to move from one occupation to another. Use of machinery, in this way, facilitates horizontal mobility of labour which makes it possible to employ labour where it can produce maximum exchange-values.

Use of machinery thus increases national output. It helps in the production of goods which would otherwise be difficult to produce.

It produces cheaper and faster and is well suited for turning out finer qualities. It also increases mobility of labour from occupation to occupation.

**Machinery and employment** We know that employment is as much a constituent of welfare as national output. The effect of the use of machinery on employment has been much contested. Marshall accepted the thesis that with the introduction of a machine, less persons have to work on the same job. But he disputed the contention that use of machinery causes unemployment. When machinery is introduced in the production of a commodity, its costs are reduced and hence more of the commodity is produced and sold. This additional demand creates employment for some workers. A number of displaced workers can also be employed in the production of machinery of new mechanical devices regarding this matter is that invention of new occupations. Two hundred years back to a very large number of radios, railways, trucks, aeroplanes, etc., etc. If we were to enumerate all the new avenues of employment which the machine age has opened to mankind the list will be formidable and we shall realise that these occupations are affording employment to millions of persons all over the world.

One thing is certain nevertheless. Introduction of every new machine immediately displaces labour. In due course of time this displaced labour may find employment partly in the same and partly in the new avenues. Yet the immediate effect is one of producing what has been called technological unemployment. In fact we had no telephones, short period one, because inventions pour in continually and go on creating unemployment again and again.

**Non-economic implications** In a conversation with some leading Indian economists in 1938 Mahatma Gandhi is said to have remarked: "Every time I see a machine my heart aches". Of course he was referring to huge power driven machines. He disfavoured the use of machines more because of its non economic implications, i.e., its effect on non-economic social welfare.

Non economic effects of machinery are important. Although machines have tended to reduce labour time required for various jobs there are few machines which are completely automatic for various every machine is semi automatic and needs the attendance of almost more workers at one time or the other. We must remember that man is not only the end but also the means of production of wealth. Machinery no doubt produces more wealth for man the end. But if in that process man, the means, suffers agony, the very aim obviously stands defeated. While, therefore, we must aim at maximising production, we cannot afford to lose sight of the welfare of the worker.

Machinery may perform jobs which are unclean or disagreeable. This system handles a dirty work for man. Monotonous jobs like the folding of new papers can also be done by machines. But the evil effects are great. Early use of machinery was accompanied by long hours of work in dark, dingy and unhealthy places, and employment of children and women, etc. Many of these defects have been removed by labour law. But even today, risk of life by accident is great. Use of machinery robs the worker of the very poetry of life. Its repeated handling tends to turn man himself into a mechanical device. The noisy, dirty and stinking atmosphere does much to deaden his faculties. Transfer a cottage worker to a mill, and he immediately feels the difference.

It is, however, not impossible to make the worker's life happy and full of interest. Proper ventilation of factories, provision of rest-intervals, games, theatrical shows, cheap tea—and many other such steps can be taken to make his life full of interest for him. Disadvantages of the use of machinery can be reduced and advantages fully reaped.

CHAPTER X  
COMBINATION OF FACTORS

THE PROBLEM

In this chapter we set out to answer two questions. First how are the factors of production distributed among various industries? And, second, how does a given producer divide his resources among various factors? Both questions relate to proportions in which various factors are used—in industries and in individual concerns. The fundamental law which helps us in this analysis is the law of diminishing returns. Before we discuss this law we must see a word of substitution as between factors as well as variability in the proportions of factors.

SUBSTITUTION AS BETWEEN FACTORS

Mutual substitution of factors. There are many jobs which can be done either by employing labour or by investing capital. A farmer may keep a chowkidar to keep the cattle or may put up a fence round his plot for the purpose. In such cases labour and capital are substitutes of each other. Similarly for a number of purposes a factory may be extended by putting up more storeys on the same area. When a farmer tries to increase his output by extensive cultivation, he uses more land or by intensive cultivation, he uses either more capital or labour, and so here land, labour and capital all prove substitutes of one another. We may thus conclude that factors of production can be substituted for one another.

Given the prices that have to be paid for the services of various factors, it is generally either the one factor or the other which can do a given job more cheaply. For instance, though folding of newspapers can be done by workers as well as by folding machines, yet, given the rate of wages and the price and life of the folding machine, it is either labour which will perform this task more cheaply or capital. In other words, labour and capital are not equally good for a given task. Similar is the case between other factors of production. Factors of production are, therefore, only imperfect substitutes of production. This fact is important and is very helpful in explaining the operation of the law of diminishing returns.

Elasticity of substitution. In technical language, the above fact of imperfection of factors as substitutes of one another is put by saying that elasticity of substitution as between factors is not infinite.

Suppose the price of one factor say  $A$ , falls and of the other, say  $B$ , remains the same, then for some purposes  $A$  will be substituted for  $B$ . In other words, the ratio in which  $A$  and  $B$  are used will change in favour of  $A$ . The extent to which this ratio will change is the elasticity of substitution of  $A$  for  $B$ . Mathematically, proportionate change in the ratio of the amounts of  $A$  and  $B$  used divided by the corresponding proportionate change in the ratio of their prices would give us elasticity of substitution of  $A$  for  $B$ . For instance, suppose that initially prices per unit of  $A$  and  $B$  are Rs. 5 and Rs. 6 respectively and that they are used in the ratio of 2:3. Now suppose the price of  $A$  falls to Rs. 4 per unit and the price of  $B$  remains unchanged and the ratio between them changes to 4:5. Then.

$$\text{Absolute change in the ratio} = \frac{4}{5} = \frac{2}{3} = \frac{2}{15}$$

of amounts of  $A$  and  $B$  used.

$$\text{Proportionate change in the} = \frac{2}{15} \div \frac{2}{3} = \frac{1}{5}$$

ratio of  $A$  and  $B$  used.

$$\text{Absolute change in the ratio} = \frac{5}{6} \div \frac{4}{6} = \frac{1}{6}$$

of prices of  $A$  and  $B$ .

$$\text{Proportionate change in the} = \frac{1}{6} \div \frac{5}{6} = \frac{1}{5}$$

ratio of prices of  $A$  and  $B$ .

$$\text{Elasticity of substitution of} = \frac{1}{5} \div \frac{1}{5} = \text{un}$$

$A$  for  $B$ .

It must be obvious that if a very small fall in the price of  $A$  results in a complete replacement of  $B$ , then elasticity of substitution between the two is infinite. This will happen when, at given price  $A$  is as good as  $B$ , i.e., they are perfect substitutes of each other.  $B$  is used only because it is cheaper. As soon as  $A$  becomes cheaper, there is a complete replacement of  $B$ . Hence infinite elasticity of substitution as between factors is synonymous with factors being perfect substitutes of one another.

#### VARIABILITY IN PROPORTIONS OF FACTORS

*Variability of proportions.* Land, labour and capital are essential for the production of a commodity, but the proportion in which they are to be combined is not fixed. It is not like the case of a chemical combination where the various elements will combine in one given proportion to produce a compound. The case of factors of production is similar to the preparation of a cup of tea where there is no single proportion in which the ingredients—water, tea-leaves, sugar and milk—must be mixed. There might be a little more or a little less of any of these ingredients. Similarly, a producer, for the same purpose, may use comparatively more labour and less capital at one

## COMBINATION OF FACTORS

time and may employ more capital and less labour at another time. In some cases it appears as if proportion between factors were fixed. For instance, a vehicle requires one driver at a time. Even in such cases, however, the fixity in proportion is more apparent than real, because the vehicle may be small or big. Similarly, though one typist works at a typewriter at a time yet one typewriter may be more costly than another because the former is made of better steel or is provided with more useful devices. The costlier typewriter represents more capital and hence in its case the ratio of capital to labour is higher than in the case of a cheaper one.

**The problem** Just because there is no rigidity about the proportion in which factors are to be used one problem for every producer is to decide about the proportion in which he would combine them. For us it is necessary to study what happens to output when proportions of factors of production are varied. If factors of production were only two the study would have been simple and hence could be comprehensive. By keeping one of the factors fixed and gradually increasing the other the ratio of the latter to the former would increase and the consequences of it could be studied. But as the number of factors is more than two variations in proportion can take many forms and hence a comprehensive study of change in proportions in such a case is difficult. One method of study of change in proportions in such a case is that one factor is kept fixed in quantity and increasing amounts of other factors are used with it. Law of diminishing returns of other factors are drawn from such a study. We shall now discuss this law.

## LAW OF DIMINISHING RETURNS

**Statement of the law** The law of diminishing returns states that we keep the quantity of one (or more) factor of production fixed, and gradually increase other factors used with it then after a point, return corresponding to every addition of the variable factors will begin to diminish that is, the additional quantities of the variable factors will also be called the law of variable proportions.

**Validity of the law** The earliest notice of the operation of this law was taken in endeavours to increase agricultural output by intensive cultivation. As intensive cultivation implies better and more careful cultivation of the same area more labour and capital are employed on it. It is quite evident that returns to additional quantities of labour and capital can neither increase nor remain constant indefinitely. For, if it were so every farmer could save nearly the whole of his rent by giving up all but a small piece of his land and bestowing all his capital on that.<sup>1</sup> Hence yield corresponding to additional doses of labour and capital must diminish after a point.

**Explanation of the tendency** Thus the validity of the law of diminishing returns is established on the basis of experience. But how can we explain the operation of th-

<sup>1</sup> Marshall Principles of Economics (8th Ed) p 171

One important fact in the situation is that quantity of land is kept fixed. If a limited quantity of land could yield unlimited crops, the question of diminishing returns in intensive cultivation would not arise. We can, however, accept it as an axiom that a limited quantity of land cannot grow unlimited output. Secondly, fixity of the quantity of land would be no handicap, if one or both of the variable factors, that is labour and capital, were perfect substitutes for land. We have already noted that though factors of production may serve as substitutes for one another, elasticity of substitution as between them is not infinite. Hence, though additional quantities of labour and capital may tend to cover up the deficiency due to fixity of land, they cannot completely compensate this deficiency.

It may be that in the initial stages quantity of land is "too much" for the amount of labour and capital used with it. For some time, therefore, returns to additions of labour and capital may increase. But as the quantities of the variable factors are increased, soon a point will be reached where the quantities of the variable factors "go best with" the given quantity of the fixed factor. This is the point of the best proportion or optimum proportion. Up to this point returns to additional doses of labour and capital may increase. Beyond this point additions of labour and capital yield diminishing returns because the combination of factors is progressively moving away from the point of best proportions.

Thus we see that diminishing returns arise in intensive cultivation because the capacity of a limited quantity of land is not unlimited; labour and capital are not perfect substitutes of land; and, after a point, increases in labour and capital remove the combination of factors farther from the point of best proportion.

Now, what is true of land in agriculture is true of every factor in every industry. Whether it be labour or capital (or even enterprise), a limited quantity of it cannot have unlimited capacity to produce. Nor does any factor have a perfect substitute in any other factor. And if labour or capital is kept fixed in quantity and other factors are increased, the amount of the constant factor may be "too large" for the initial amounts of the variable factors, yet as the variable factors increase gradually, a stage is bound to reach beyond which further increases in the variable factors will carry the combination beyond the point of best proportion. All these facts hold good for every factor of production irrespective of the fact whether the field of production is mining, fishing, manufacture or trade. Hence the law of diminishing returns is not a law which operates only when land is kept constant in agriculture. It is a universal law and applies to fields of productive activity wherever one or more factor is so scarce that its quantity cannot be increased.

*Graphical representation.* The operation of this law can be more easily understood by curve representation. Let given small quantities

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of the various variable factors which we may call a "dose" of variable factors. Along  $x$ -axis are shown (Fig. 10.1) "doses of variable factors" and along  $y$ -axis the increments in output due to successive "doses". To start with the fixed factor is large in quantity in comparison with a "dose" of variable factors. Increments in output increase till  $OM$  doses have been employed. This is the point of optimum proportion. As doses of variable factors are further increased, there are diminishing increments in output. Beyond  $OM$  "doses" of variable factors, thus, the law of diminishing returns begins to operate.

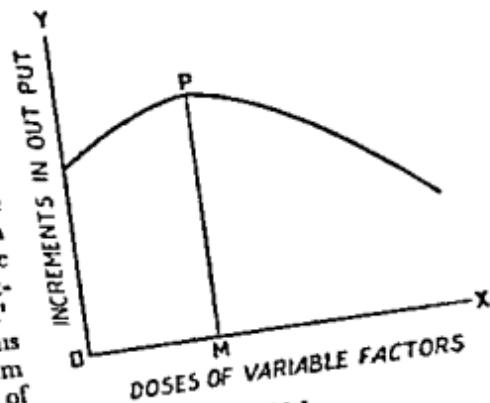


Fig 10.1

**Assumptions** Classical economists studied this law exclusively in relation to agriculture. They held that quantity of land in the world being fixed as population increases output per man would fall. Since then population has increased enormously, but output per man has also increased. Explanation of this lies in the use of improved methods of cultivation. Hence if it so happens that land is not being skilfully cultivated and along with increase of labour and capital employed on it, technique of cultivation is also improved, additional returns may be more than proportionate. But if methods of production remain unchanged, increase in returns will (after a point) be less than proportionate. The law of diminishing returns thus assumes that the state of technical knowledge is given and that no new inventions are made. Thus, however, does not imply that use of new improved methods obviates the operation of the law. Given the new methods, diminishing returns operate all the same, only increments due to every successive "dose" of variable factors is larger than it would be with less efficient methods. Fig 10.2 makes the proposition abundantly clear.

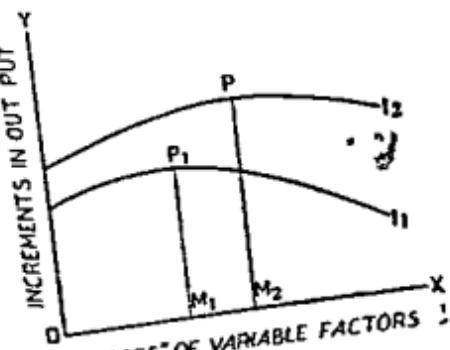


Fig 10.2

I<sub>1</sub> is the curve for increments in output when less efficient methods are used. I<sub>2</sub> is the curve for increments in output when more efficient methods are used. The area under the curve I<sub>2</sub> is larger than the area under the curve I<sub>1</sub> for the same doses of variable factors.

are used.  $I_2$  is the curve when improved methods are employed. Evidently diminishing returns operate (of course, after a point) in both cases.

Another assumption of this law is that various units of a factor are exactly similar. If units of the variable factors which are employed later on are bigger, or are otherwise more efficient, increments in output due to them may increase. Output will increase at a diminishing rate if variable factors consist of units which are all equally efficient.

It may be that as a producer employs larger quantities of variable factors and thus becomes a purchaser of larger quantities of them, he can purchase them at cheaper rate. Gain in the prices of factors may then outweigh the reduction in additional output. But we are not concerned with money prices here. The law of diminishing returns relates to physical quantities of factors of production. Similarly, it relates to physical quantities of the output. It states that additional quantities of variable factors give diminishing returns. This is why the law of diminishing returns has been described as a technical fact. It correlates the output of a commodity with variations in the proportions of the factors of production.

If prices of the variable factors as well as price of the commodity produced are given, then the tendency to diminishing returns is the same thing as tendency to increasing costs. Equal quantities of variable factors yield diminishing increments of output. In other words, each successive increment of product costs more and more of variable factors. Factor prices being given, money costs of additional output increase.

#### MARGINAL AND AVERAGE PRODUCTS

*Definitions.* We have enunciated the law of diminishing returns in terms of "increments of product due to successive doses of variable factors." This is a cumbersome phrase and can be replaced by "marginal product". In fact the law could be stated not only in terms of marginal product but also in terms of average product of the variable factors. Let us define these two terms and study the relation between them.

Average product of a factor of production is the total product due to that factor divided by the amount used of it. If the product due to  $n$  labourers working on a given area of land is  $m$  maunds of wheat, average product of labour will be  $\frac{m}{n}$  maunds. Of course in finding the average product of various quantities of a factor, quantities of other factors as well as technique of production are taken as given.

Marginal product of a given quantity of a factor is the difference made to the total produce when a unit reduction is made in the quantity of the factor.<sup>2</sup> As in the case of average product, while calculating

<sup>2</sup> It must be noted that we can speak of average and marginal product of a single factor as well as of a composite of factors.

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the marginal products of different amounts of a factor amounts of other factors will be kept fixed will be the difference between the product of  $n$  labourers and the product of  $(n+1)$  labourers, other things remaining the same. Marginal product of a factor is defined by some writers as increase in the total product when one additional unit of the factor is employed. According to this definition marginal product of  $n$  units would be difference between products of  $(n+1)$  and  $n$  units. But as pointed out while defining marginal utility the marginal unit of the factor must be contained in the amount used. The former definition is, therefore, more scientific.

*Relation between M.P. and A.P.* How do marginal and average products of a factor vary as its quantity increases? It is a case of the operation of diminishing returns because in such a study, while the factor in question is gradually increased other factors are kept constant. As one factor in a combination of factors is increased, its marginal and average products begin to decline after a stage. This stage is reached earlier in the case of marginal product than in the case of average product. This proposition as well as general relation between average and marginal products can be illustrated with the help of the following table. For the sake of convenience we assume in this table that there are only two factors of production, land and labour.

TABLE 9 a

RICE OUTPUT OF LABOUR WORKING ON ONE ACRE OF LAND<sup>3</sup>

(In mds.)

No of Labourers	Total Product	Average Product	Marginal Product
1	40	40	40
2	90	45	50
3	150	50	60
4	220	55	70
	—	—	—
5	280	56	63
6	340	56.67	58
7	406	58	—
	—	—	—
8	448	56	12
9	468	52	20
10	470	47	2
11	—	—	0
	—	—	—
12	456	38	-14
13	416	32	-40

<sup>3</sup> All quantities are quite arbitrary

It is evident from the table that in respect of average product diminishing returns begin to operate when the number of labourers is increased beyond seven. Marginal product, on the other hand, begins to diminish as the number of labourers exceeds four. Relation between marginal and average products is as follows:—

1. For the initial unit of the factor, marginal and average products are equal—forty in the above table.

2. As the amount of the factor is increased, both marginal product and average product increase but the former increases more rapidly than the latter.

3. A point comes when marginal product begins to fall (after four labourers in the above table) but average product is still rising till both of them are equal (at seven workers per acre).

4. Marginal product equals average product where the latter is the highest. After this point both fall but marginal product falls more rapidly than the average product.

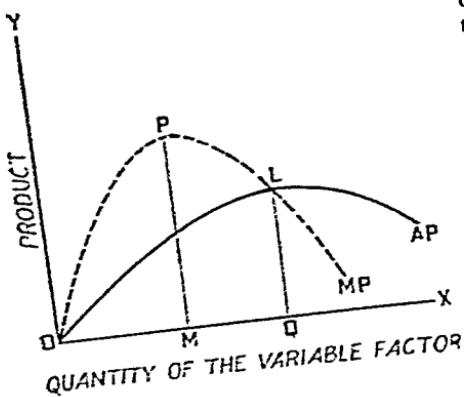


Fig. 10·3

product is equal to it. Beyond this stage both the curves slope downwards but the marginal product curve slopes more steeply.

#### DISTRIBUTION OF FACTORS AMONG INDUSTRIES—PRINCIPLE OF SUBSTITUTION

*Statement of the principle.* Every factor of production, in a capitalist economy, gets distributed in the various industries in accordance with the principle of substitution. In this context this principle states: "A factor of production gets distributed among various industries in such a manner that its marginal product in different industries is equal." When marginal product in different industries is equal, total product due to it will be maximum. For, when marginal product in two industries is unequal, its total product can be increased by shifting some of it from that use where marginal product is less to use where marginal product is higher. And when marginal

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product in any two uses is equal, any shifting of it from one use to the other will mean a loss of marginal product and a gain of less than marginal product.

Contrast with the law of equi-marginal utility. The above principle is analogous to the principle of equi marginal utility and hence may be called the principle of equi marginal utility. Validity of the principle of equi-marginal utility is conditional upon the validity of the law of diminishing utility. Quite similarly the validity of the principle of equi-marginal product. We have, however, noted that diminishing returns arise only after a point. It may be that marginal product of the factor in two industries becomes equal when one of the industries additional quantities becomes equal when one of the increasing returns. Such a situation would be an exception to the principle of equi marginal product because transfer of some units of the factor to the industry where marginal product is lost in the other industry will yield more product than is lost in the other industry. Consider, for instance, the following table.

TABLE 9 b  
Marginal Product of Labour

Units	1	2	3	4	5	6	7	8	9	10
Use A	20	25	32	45	60	68	55	43	31	19
Use B	52	60	55	52	48	45	33	25	18	11

There are, suppose, ten labourers in all and A and B are the only two uses where they can be employed. If four labourers are employed in use A and six in use B, marginal product in either use will be 45. But this is not the best distribution of the factor because total product can be increased by shifting labour from B to A. It is so because labour is yielding increasing marginal product in use B. If, on the other hand, seven labourers are employed in use A and three in use B, marginal product is equal and total product maximum because diminishing returns are operating at the margin in both the uses.

Thus, a consumer equalises marginal utility of a commodity in its various uses and rests assured that the total utility is maximum. Or, when total utility is maximum, he finds that marginal utility is equal in all uses. On the other hand, when total product due to a factor is maximum, its marginal product in various industries will be equal, but when its marginal product in various industries will be cannot be sure that total product is maximum. In a mountainous area there are a number of hill tops, but there is only one hill-to among them which is the highest. Similarly, in the distribution

a factor there are many maxima arrangements which equalise marginal product, but there is only one of these arrangements which maximises total product. This arrangement is the arrangement of absolute maxima. With this arrangement additional quantities of the factor will yield diminishing returns in every industry.

Theoretically, the fact of there being many maxima arrangements and only one arrangement of absolute maxima is obvious and instructive. But in our further argument we can ignore this fact because arrangements other than absolute maxima are not equilibrium arrangements. When a factor is yielding increasing returns at the margin in any use, the arrangement would be changed. Equilibrium is achieved only at the point of absolute maxima. Hence position when marginal product of the factor is diminishing in every use is the only one relevant to consideration.

*Meaning of equal marginal product.* Comparison of the working of this principle in a capitalist and a controlled economy is interesting. Marginal product of a factor in any two industries consists of different commodities. For example, marginal product of land under wheat may be three maunds of wheat, and under barley it may be four maunds of barley. How can we say whether the two quantities—three maunds of wheat and four maunds of barley—are equal or unequal? In a controlled economy it is the dictator (whether that be the all-powerful political head of the State or the central planning authority) whose values are the basis of valuation. If he (or they) considers three maunds of wheat equal to four maunds of barley, they are equal, otherwise not. In a capitalist economy, on the other hand, market prices form the basis of valuation. If in the market three maunds of wheat sell for the same price as four maunds of barley, the two quantities are equal. Hence equilibrium distribution of a factor in the production of various commodities will be such that:

$$\begin{aligned} \text{Marginal product in commodity } A \times \text{Market Price of } A. &= \text{Marginal product in commodity } B \times \text{Market price of } B. \\ &= \text{Marginal product in commodity } C \times \text{Market price of } C. \end{aligned}$$

*Mechanism of equalisation.* How is the equalisation of marginal product actually brought about? Suppose land can produce only either wheat or barley. Marginal product of wheat is three maunds and of barley is four maunds. Market price of wheat is Rs. 16/- and of barley Rs. 12/- per maund. In either case marginal product is valued at Rs. 48/-. There is equilibrium. Now suppose the demand for wheat rises and that for barley falls, so that price of wheat rises to Rs. 20/- and of barley falls to Rs. 10/- per maund. Growing of wheat becomes more profitable. Owners of land will shift some land from barley to wheat. Physical marginal product of wheat falls and of barley rises. Suppose marginal product of wheat falls to  $2\frac{1}{2}$

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maunds and of barley rises to 5 maunds. Once again in both cases marginal product commands the same value, i.e., Rs. 50/- This is the new position of equilibrium.

*Abundant factors.* Commodities which are free goods command no price in the market; their price is zero. If a factor of production is a free good, such as land in a newly colonised country, it is used in various industries in such a manner that its marginal product in all industries is zero. Hence the principle of equi-marginal product holds good even in the case of factors of production which are free goods.

## COMBINATION OF TWO FACTORS—THE LIMITS

Let us consider how a given entrepreneur distributes his resources among the various factors of production. It will be better if we start with the assumption that there are only two factors of production, say, land and labour. With this simplifying assumption we can arrive at some definite conclusions. Consider table 9-a which is reproduced below:—

RICE OUTPUT OR LABOUR PER ACRE  
(In mds.)

No of Labourers	Total Product	Average Product	Marginal Product
1	40	40	40
2	90	45	50
3	150	50	60
4	220	55	70
5	285	57	65
6	348	58	63
—	—	—	—
7	406	58	58
8	448	56	42
9	468	52	20
10	470	47	2
11	470	42.7	0
—	—	—	—
12	456	38	-14
13	416	32	-40

*Maximum average product of one factor means zero marginal product of the other.* When the number of persons employed on an acre is eleven, marginal product of labour is zero. Also, with eleven persons working on an acre, output per acre is maximum. In other words, combination which makes marginal product of labour zero, also makes average product of land maximum. Similarly, with seven persons working on an acre, average product of labour is maximum. With this combination marginal product of land is zero. For, a small increase in the quality of land will not result in any increase of output from it.<sup>4</sup> Hence here also we find that combination, which makes marginal product of land zero, also makes average product of labour maximum.

*One abundant factor.* Suppose labour is abundant and land scarce. To be exact, let us imagine that there are 91 workers and only seven acres of land. If all the labourers are employed, there will be thirteen persons working on each acre. In that case:

$$\text{Output per acre} = 416 \text{ mds.}$$

$$\text{Total output} = 416 = 7 \text{ mds.}$$

If, on the other hand, fourteen persons are allowed to work on each acre, and only eleven persons are left unemployed then:

$$\text{Output per acre} = 470 \text{ mds.}$$

$$\text{Total Output} = 470 = 7 \text{ mds.}$$

Evidently then total output can be increased by reducing the number of labourers employed. This means that however abundant labour is (or, scarce land is), number of workers employed on an acre of land will not be more than eleven.<sup>5</sup> Similarly, we can show that however scarce labour is (or, abundant land is), number of workers employed on an acre will not be less than seven. Thus when land is scarce and labour abundant, they will be so combined that average product of land is maximum and marginal product of labour

<sup>4</sup> Suppose the quantity of land for seven persons is increased from one acre to  $1\frac{1}{6}$  acres. This will make land available at the rate of an acre to six persons. Average product per labourer will remain the same. It would therefore be better to leave out  $1/6$ th of an acre and maintain output at the previous level.

<sup>5</sup> This is an important conclusion. It brings to light the fact that maximum output does not always result from using all resources. Maximum use of resources is not necessarily the best use of them. In some cases it may be advantageous to leave some quantity of a factor idle. When colonists settle in a new country, they find it in their interest not to cultivate all land available. It must also be noted that if the factor in question is a physical factor, the above argument applies unreservedly. If, however, the factor involved is human beings, the argument is still valid but the conclusion is not the same. We have already decided that employment of more men may be recommended even if it

injures welfare. Employment of more men may be recommended even if it

an acre. If labour is abundant, it will be eleven persons per acre. If both are scarce, the ratio will lie somewhere between these two extremes, depending upon the relative scarcities of the two. If labour is more scarce than land, it will be nearer to seven persons an acre and *vice versa*.

This analysis helps us to arrive at a definite conclusion regarding the circumstances when one factor is abundant and the other scarce. When both of them are scarce, we can know only the limits between which the actual ratio must lie. What exactly the ratio will be is difficult to find out. In that field the method of iso-product curves helps us.

### COMBINATION OF TWO FACTORS—ISO-PRODUCT CURVES<sup>6</sup>

*Isequants.* As before we assume that there are two factors, land and labour. Technical production conditions are also taken as given so that output, which a combination of any given quantities of the two factors can produce, is also given. We know that if the quantity of one of the factors, say labour, increases and of the other factor, i.e., land, is kept fixed, output will inc. se (though not proportionately). Also, if quantity of land is reduced, and the number of labourers remains unchanged, output will fall.

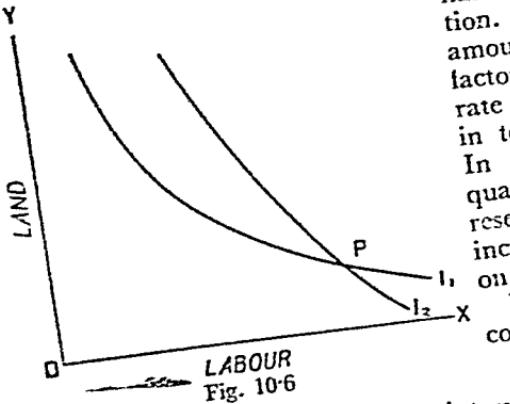
Now, suppose number of labour is increased. There must be a given reduction in the area of land which will leave the output unchanged. For instance, suppose 60 labourers working on 10 acres of land produce 3,000 maunds of rice. Also, if labourers are increased from 60 to 70 and the area is reduced from 10 acres to 9 acres, output is unchanged. Then, the two combinations of factors—60 labourers + 10 acres and 70 labourers + 9 acres—are equal product combinations or iso-product combinations. If we prepare a statement of all such combinations for any given output, we get the iso-product schedule for that output. There is a different iso-product schedule for every level of output. Given below is one such schedule:

TABLE 9-c

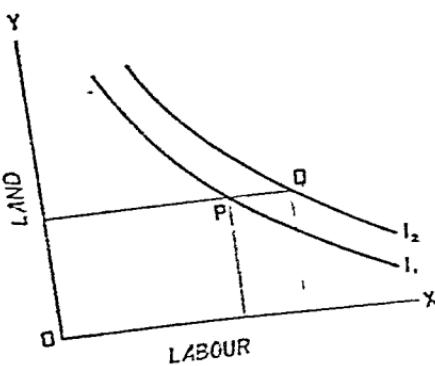
3000 mds. of rice are produced by 60 labourers + 10 acres of land;
or, 70 labourers + 9 acres of land
or, 82 labourers + 8 acres of land;
or, 98 labourers + 7 acres of land;
or, 120 labourers + 6 acres of land;
or, 150 labourers + 5 acres of land;

<sup>6</sup> Iso-product curve in production is analogous to indifference curve in  
of indifference curves.  
Much similarity will, therefore, be found in this discussion and

This will be so because marginal product of labour falls as more of it is employed. It is true also because the marginal product of land rises as its quantity diminishes. Our conclusion is that as the number of labourers increases, reduction in the quantity of land which will just be compensated by addition of one labourer falls.<sup>9</sup> This is the principle of diminishing marginal rate of technical substitution.



3. Two isoquants cannot intersect. Suppose (Fig. 10.6)  $I_1$  is an isoquant for 40 units of the product and  $I_2$  for 60 units. It then implies that combination  $P$  can produce both 40 units as well as 60 units, which is absurd.



represents a larger output.

9. We arrive at the same conclusion if we consider marginal rate of technical substitution as ratio of marginal products.

10. Obviously, this is subject to the assumption of the law of diminishing returns. We have noted earlier in this chapter that if a factor is yielding increasing returns in any single use, the position cannot be one of equilibrium. At the point of equilibrium marginal product in every use must be diminishing. Hence the assumption.

The iso-cost In the analysis of demand by indifference curves, we made use of what is called price-line. Analogous to that we have here the iso-cost.

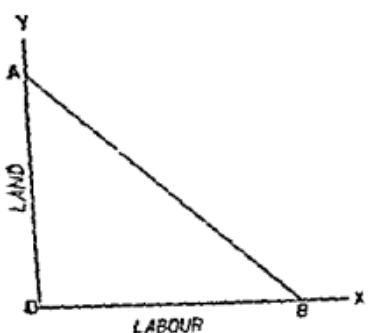


Fig 10.8

If we know the isoquant map of an entrepreneur and the iso-cost line, we can easily find out in what proportion he will combine the two factors.

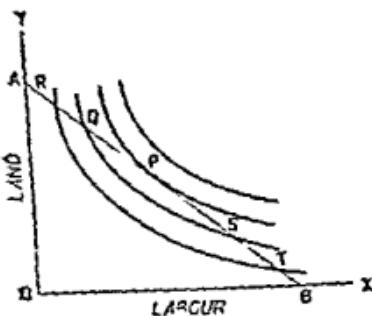


Fig. 10.9

point where the iso-cost touches an isoquant tangentially  $P$  is, therefore, the combination which he will have.

*Scale-line* What will happen if his resources increase? Line  $AB$  will move to a new position to the right and in the new position it will be parallel to the old one. Choice combination will now lie on another curve to the right. If we locate various combination points which he chooses as resources change, we trace what is called the "Scale Line" or "The Expansion Path". Scale line is, therefore, the locus of the points representing various combinations of factors which the entrepreneur prefers as his resources changes. It also shows the combinations of factors for different outputs.<sup>11</sup> In figure 10.10,  $PQR$  is the scale-line.

11 As we shall see in a later chapter decisions regarding output depends on revenues as well as costs of different however first decide upon the output and then find out how be with minimum outlay. Scale line is the locus and line for and hence helps him to find out this minimum outlay.

Thus the combination of factors selected depends on outlay. It also depends on the relative prices of the two factors. If the price of one of them, say labour, falls and the price of the other, i.e., land, remains unchanged, the amount used of the former will increase. Output produced will also be larger. But the quantity of the other factor, that is, land, may be more or less or may even remain the same. All these possibilities are shown in the following diagrams:

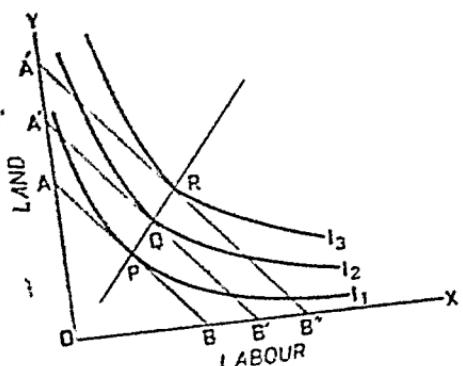


Fig. 10.10

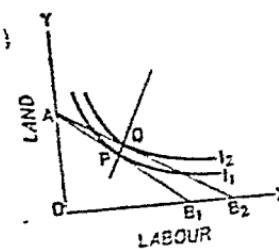


Fig. 10.11 a.

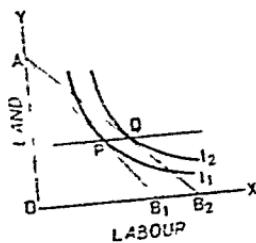


Fig. 10.11 b.

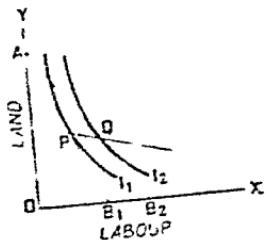


Fig. 10.11 c.

The three stages. We can show our three stages on an isoproduct map also. When marginal product of either factor becomes negative, the isoquant begins to slope upwards. Such portions lie on either end of every isoquant. For beyond a point its marginal product becomes negative. As labour is increased, beyond a point, marginal product of land become negative. We can thus spot two points on every isoquant at which marginal product of either factor is zero. These points represent the limits. If such points on isoquants are joined, we get two lines which mark off the three stages (Fig. 10.12).

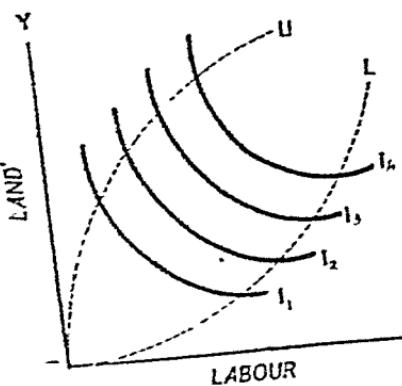


Fig. 10.12.

## COMBINATION OF FACTORS

Points along the line  $U$  represent combinations where marginal product of land is zero. Along the line  $L$ , marginal product of labour is zero. Region between  $y$ -axis and  $U$  is stage I. That between  $x$ -axis and  $L$  is stage III. Stage II lies between the lines  $U$  and  $L$ .

## DISTRIBUTION OF RESOURCES—MANY FACTORS

**Multiplicity of factors** Such fine specimens of analysis as above are easy to produce on the unreal assumption that there are only two factors. If, however, the number of factors of production is more than two, as it is, the above methods of analysis do not leave us anywhere. Have we any generalisation to offer regarding the distribution of resources by an entrepreneur among the various factors when they are more than two? Let us proceed on the assumption that he has given resources with which he is to produce a commodity. Of course his aim is to produce at the lowest cost which means that he would try to produce maximum output with the given resources.

**Principle of substitution** Two factors relevant to the analysis are the marginal products and the prices of the various factors. Price of the commodity to be produced is irrelevant because if the price of the commodity changes, value of marginal product of every factor changes proportionately.

Suppose a unit of every factor of production is available for use for a year for the same price. In that case in the equilibrium distribution of resources, marginal product of every factor will be equal. If marginal product of any factor is larger than that of any other, the entrepreneur can increase his output by diverting some of his outlay from the latter to the former. Thus when marginal product of every factor is the same, output will be maximum.<sup>12</sup>

Price of a unit of every factor is, however, not the same. Suppose an acre of land is available for a year at twice the price at which a labourer can be engaged for the same period. In that case maximum output will be produced if land and labour are used in such quantities that marginal product of land is twice the marginal product of labour. The fundamental guiding principle, therefore, is that maximum output will be produced if the entrepreneur so distributes his resources among various factors that

$$\frac{\text{Marginal Product of Factor no } 1}{\text{Price of Factor no } 1} = \frac{\text{Marginal Product of Factor no } 2}{\text{Price of Factor no } 2}$$

If the ratio of marginal product of factor no 1 to its price is greater than the same ratio for factor no 2, it will pay the entrepreneur to use more of factor no 1 and less of factor no 2. If these ratios

12. Of course at equilibrium every factor is yielding diminishing marginal product. If any factor is yielding increasing returns, equilibrium will be unstable till it finds such an equilibrium where diminishing returns are operating at the margin for every factor.

are unequal for any two factors, output will not be maximum. Let us take a numerical illustration.

Suppose an acre of land can be rented for Rs. 200 a year and a labourer can be hired for Rs. 1000/- a year. Also suppose that an entrepreneur is employing such quantities of these that marginal product of land is 200 mds. and of labour it is 1,200 mds. Then:

$$\frac{\text{Marginal Product of Labour } 1200}{\text{Price of labour } (1000)} > \frac{\text{Marginal Product of Land } 200}{\text{Price of land } (200)}$$

At the margin, one rupee spent on labour yields  $\frac{6}{5}$  units and on land it yields one unit of the product. He would, therefore, divert some of his outlay from land to labour. By so doing, marginal product of labour will fall and that of land would rise till in both cases ratio of marginal product to price is the same. When this ratio of marginal product to price is the same for all factors, the entrepreneur will be making the best use of his resources. In other words, he will be employing least cost combination of factors.

*Changes in the data.* It is quite evident that least cost combination of factors for any given outlay depends on relative prices of factors. If prices of all factors rise or fall in the same proportion, least cost combination will still be the same. If, however, prices of some factors rise and of others fall, or if some rise (or fall) more than others, least cost combination for any given outlay will change. In the new set-up, relatively more of those factors will be employed which are now cheaper or less dearer in comparison with other factors.

## SCALE OF PRODUCTION

Scale of a unit of production is an important determinant of the cost per unit of its output. Since an entrepreneur takes all those steps which reduce costs, he has to take a decision in respect of the size of his business unit which will be in keeping with this aim. In large-scale production there are possibilities of many economies and in small-scale production he can comparatively more easily make certain that there are few wastes through oversight or loose management. These and many other considerations which guide him in the determination of the scale of his business unit may now be studied. We begin with the law of increasing returns.

## LAW OF INCREASING RETURNS

*Statement of the law* This law states Expansion of an industry is, upto a point, accompanied by a more than proportionate increase in returns, provided supply of the requisite factors is elastic. In terms of costs, this law says that as an industry, in which supplies of factors of production are easily procurable, expands, its cost per unit of output goes on falling up to a point.

*Explanation of the tendency* Increasing returns or decreasing costs are the result of actual economies. These economies have been classified into internal and external economies. Internal economies are those economies which arise within a firm as a result of the expansion of that firm and are not shared by other firms in the industry. External economies, on the other hand, arise in an industry as a result of the expansion of that industry and are commonly enjoyed by all the firms in that industry. Expansion of an industry may mean either expansion in the sizes of existing firms, or addition of new firms, or both. Whichever form the expansion of an industry may take, external economies are likely to arise because they are the result of such an expansion. But if this expansion results from addition of new firms only, sizes of the existing firms remaining unchanged, no internal economies will arise.

*Internal economies* Let us enumerate some of the important internal economies first. There are some costs which do not increase when a firm enlarges its size. This is on account of the fact that factors of production in the real world consist of indivisible units. This feature of indivisibility is common to men, animals, tools as well as machines. One person is required to drive vehicle whether that vehicle is big or small. Similarly one horse will drive a tonga whether that it carries one, two or four persons. One plough may be enough to

ten acres of land, yet even when the area cultivated is much less, one full plough is still needed. Some machines, like an hydro-electric plant, cannot be produced in a small size. There are others which can be so produced but even in such cases there is a limit beyond which capacity of the machine cannot be reduced. Hence, there is a minimum of productive capacity which has to be provided howsoever small the output may be. Production of small output does not use all factors to full capacity. As output is increased, units of factors which were being used below capacity have not to be increased and, hence, there is a saving on their account.

There are some costs which do not increase proportionately with the output. That is, when the output is, say, doubled, cost on their account is less than doubled. For instance, cost of marketing does not vary proportionately with the output. The number of salesmen, outlay on advertisement, expense on correspondence with agents, etc., do not increase as much as the sales. Similarly, when a cinema house doubles the number of shows, it may not have to double the salary of the manager. Increase in the area of cultivation does not increase the cost of fencing proportionately. Double the area, and perimeter is less than twice. Methods of higher degree of specialisation are not proportionately more expensive. Machines of larger capacity are cheaper to make as well as to operate. An electric generator of 400 H.P. does not require twice as much iron to make as the same of 200 H.P. Nor does the former require twice as many men to operate. Similarly, as Edgeworth pointed out, water resistance to a ship does not increase with the ship's capacity and hence the cost of fuel per unit of load decreases as load capacity of the ship increases.

Extension of division of labour is also a source of economy. Extent to which it can be extended depends on the scale of production. Larger the scale, larger is the number of workers and greater is the scope for specialisation and splitting processes into simple operations. With extension in the size of the business unit, managerial functions can also be split up. There can be a separate manager for each field—production, sales, purchases, construction, labour welfare, etc., etc. The entrepreneur has not to waste his time and energy on minor details and his organising ability finds full scope for utilisation. He gives undivided attention to matters of fundamental importance while his managers concentrate on problems in their respective spheres.

A fourth category of internal economies is attributable to "strength through size." It is only a large firm which can afford a higher degree of specialisation and use expensive machinery. Small firms cannot bear the cost of many helpful but costly devices. Again only a large firm can employ experts and specialists for purchase, sale, production, labour problems and research. With their assistance materials can be strictly tested, research for improvements in

the methods of production can be persistently carried on, and labour troubles can be reduced to the minimum. Wholesale purchases are cheaper purchases. More can be spent on advertisement and a varied choice can be offered to the buyers. Also, a large firm has a greater capacity to bear losses and make advance provision for meeting such losses. "Strength through size" also manifests itself in reputation which makes it comparatively easier for the firm to raise capital through shares and debentures. It is also easier for it to borrow money on cash-credit basis. A larger firm by virtue of its reputation can borrow more, can borrow cheaper, and can borrow for longer periods.

Internal economies result from vertical integration also. By-products, which are likely to go waste in the case of a small firm, can profitably be utilised as the firm grows large in size. The most famous example is that of meat packing industry at Chicago where large firms make use of every by product, wasting not even a hair. Similarly, scope for utilising waste products is very great in the destructive distillation of coal. Large firms may also take up the production of their own raw materials and tools. For instance, sugar factories may grow their own sugar-cane. Using of their own 'wastes' and production of their own raw materials and tools not only increase receipts and reduce costs of production, they also reduce costs of transport as well as risks of transport system being upset.

*External economies.* Come to external economies. One category of them is due to the fact that as an industry expands specialisation in allied occupations, trades and professions becomes profitable. We have spoken above of internal economies arising from integration. It is, however, possible that with the expansion of the industry, specialised firms come into existence which work up its 'wastes'. The industry can then sell them at a good price. Similarly, other firms may specialise in supplying materials, tools and machinery, and traffic and marketing facilities. Institutions may undertake training of workers for the industry. Journals may begin to be published which supply the industry with information regarding markets, advancement in techniques, etc. Some lawyers and doctors might specialise in laws and diseases connected with the industry. In all such cases internal economies of the allied industries and occupations become external economies to the industry in question.

Some external economies may also be attributed to 'strength through size'. Just as a large firm can afford many useful expense which a small firm cannot, similarly a large industry can undertake many useful activities. Producers may associate to make suitable arrangements for their own transport. They may jointly set up training institutions, undertake research, propaganda and advertisement. They may also arrange for supply to themselves of cheap goods and services. For instance, they may all subscribe capital to form a company which supplies them electric power at cheap rates.

It may, however, be noted that such economies are more apt to be enjoyed if the industry is localized.

The third category of economies arises from the fact that bigger the industry, the greater is its importance in the economy of the country. A depression in such an industry can easily affect among a large section of the people. The government is thus obliged to take a keen interest in the prosperity of such an industry. And the producer, in the industry, find themselves in a favourable position for seeking cover from the government. They may secure facilities like railway sidings, cheaper freights, protection from foreign competition, access to hard currency and the like. The government may of its own volition, or as a result of representations, give training institutions, undertake research, and supply market reports and weather forecasts.

### SCALES FOR SMALL-SCALE PRODUCTION

A formidable list can be prepared of economies of scale. It may then be argued that in view of these economies every firm will continue to grow till it embraces the whole industry. But we find the recurrence of this phenomenon in very few industries. Moreover, if so large are the economies of scale, how do we account for the persistence of small-scale production in a very large number of industries. The explanation lies in three important facts.

*Limitations on resources.* First, there is a limit to the operation of economies. A stage may come when the most efficient machines and the best known techniques are being employed, productive capacity is being completely exploited and the entrepreneur's ability is being utilized to the full. We have already noted limitations on the extension of division of labour. Machines become unwieldy after a size. More expenditure on research and educational institutions will be a waste after a limit. Too many journals will confound rather than inform the entrepreneurs. And there is no scope for more benefit from auxiliary industries after a point.

*Opinion of dis-economies.* Secondly, actual diseconomies begin to operate as the size enlarges beyond a point. The law of increasing returns assumes an elastic supply of the requisite factors. But after a point some factors may not be available and supplies of others may be forthcoming only at enhanced rates. Necessary investment and resourcefulness of every entrepreneur. Similarly more skilled labour may not be available or may have to be attracted from other industries on promise of better rewards. Also, to produce raw materials, land may have to be shifted from other uses and inferior deposits may have to be mined. Moreover, a firm cannot have two entrepreneurs and there is a limit to every entrepreneur's power of control and supervision. As the firm grows unwieldy, workers interfere with one another, red-tapism pervades every department.

## SCALE OF PRODUCTION

co-ordination deteriorates, supervision becomes thin and wastes multiply. It becomes difficult to push sales further in the usual markets and more distant areas have to be explored and approached. Costs of transportation and advertisement increase.

*Special reasons.* Apart from limitations on economies and operation of diseconomies, there are special reasons for the existence, persistence and survival of small firms. Every producer is not capable of controlling a large firm. Even those who possess the requisite ability, prefer to make a start with a small unit because they do not consider it wise to take great risks to begin with. Some may have the skill as well as ability to enlarge their works but may not have influence enough to procure large capital. Such people have the option of joining large firms as salaried managers. In certain cases production has to be on a small scale because specific factors required for it, say mines are limited in supply. Moreover, small scale production has its own advantages which in some fields outweigh the advantages of large-scale production. A small producer can bestow his attention on the minutest details of his business. His supervision is comprehensive and effective. He can manage to be well informed about the various aspects of the firm and can, therefore, make quick decisions regarding purchases, sales, contracts, leave to workers, etc. Fewer men are, as a rule, easier to please and hence there are less chances of friction between the employers and his workers. Lastly, it is small-scale production which is more suited to the production of certain commodities and services. Market for heavy and bulky goods is limited in space and time. They have, therefore, to be produced in small amounts as well as time. They have, therefore, to be produced for perishable goods in space as well as time. They have, therefore, to be produced in small amounts. Likewise there are trades where individual tastes have to be catered to. Tailoring is an important example of this category. Still another category consists of commodities where every unit requires a special attention. In repair work, for instance, every individual job has to be tackled in its own way and there is little which can be reduced to routine treatment. Works of art is another field of this kind.

## FURTHER CONSIDERATIONS ON ECONOMIES

1. Distinction between internal and external economies. Distinction between internal and external economies is not water-tight. What are internal economies under one circumstance is not so under another. Internal economies in one circumstance become external economies in another circumstance. For instance, when an industry becomes large, it becomes profitable if this use is made by the firms themselves. If this use is made by other firms outside the industry, it is an internal economy, for example, if firms in the sugar industry sell it to spirit makers, it is an internal economy. A very interesting case is that of coal mines. Amount of water which a mine owner has to pump out from the shaft decreases

as mining extends in the neighbourhood. Now, if the same owner quarries neighbouring mines, it is an internal economy, while if other people do it, it is an external economy to him. Moreover, what is an internal economy for one industry is an external economy for some other industry. As the railway system expands, internal economies arise. It then finds itself in a position to supply cheaper transport to other industries which is an external economy for them. It is because of this consideration that some economists stress that there are only internal economies and no external economies. Lastly, internal and external economies sometimes arise in a chain. As an industry expands, external economies sometimes arise. Firms which were already in the field find it advantageous to increase their output which results in internal economies and may be some more external economies. Very appropriately, Professor Robertson would lump them together and call them internal-external economies.

2. *Criticism of Marshall's treatment.* The dichotomy of economies resulting from expansion of an industry into internal and external economies was first made by Marshall. In respect of internal economies he has been criticised for not distinguishing between economies arising from the use of a larger plant and economies due to the expansion of the firm, that is, economies which are technical and those which are organisational.<sup>1</sup> He does speak of economies arising from an increase in the output and those which result from an increase in purchases and sales. He writes: "There are many trades in which an individual producer could secure much increased "internal" economies by a great increase of his output; and there are many in which he could market that output easily."<sup>2</sup> Yet, though economies arising from marketing a larger output are organisational, all economies flowing from production of a larger output are not technical. For instance, a larger firm can spend more on research and ultimately find a superior technique. This is an organisational economy. And division of labour is of course an organisational economy.

In respect of external economies, Marshall's approach is very confused. In fact external economies are of two kinds. There are economies arising within an industry as a result of expansion of that industry. Concessions wrested from the government are economies of this kind. There may also be external economies arising outside the industry as a result of growth of correlated branches of industry. Economies offered by improvements in the means of transport and communications are available to all industries. They are obviously the result of development outside the industry.

Marshall's external economies "arising from an increase in the scale of production of any kind of goods" are obviously different from "those dependent on the general development of industry."<sup>3</sup>

1 Cf. Stigler, George J., *Production And Distribution Theories*, p. 69.

2 Op. cit., p. 286.

3 Op. cit., p. 266.

## SCALE OF PRODUCTION

The former arise within the industry as a result of its growth. The latter arise outside the industry as a result of economic development in general.

Marshall's discussion of the value of a commodity is a partial equilibrium analysis. In such a discussion determination of the price of a commodity is studied on the assumption that other industries remain as they are. In other words, economies arising outside the industry under consideration are ruled out. For a larger output of the industry only economies rising within the industry can be taken cognizance of.

The fact of external economies of the second type is a source of very important interrelation among various industries and is of special significance in respect of economic development. Increase in agricultural and mineral output makes expansion of manufacturing industry possible. On the other hand, expansion of manufacturing industry makes increase in agricultural and mineral outputs profitable. Similarly, expansion of transport facilities and mineral outputs profitable makes expansion of transport increases. And increase in commodity production becomes necessary when one sector of the economy influences another sectors. Hence economic growth and are influenced by changes in the whole economy. Development of various sectors proceeds side by side. This is why external economies in this sense are considered as "crucial". This is why external economies in this sense are considered as "crucial". Development of various sectors which must pervade the dependence of economic development will not take long to strangle itself.<sup>4</sup> This is why external economies in this sense are considered as "crucial". They are at one point upon simultaneous changes at other points.<sup>5</sup> They are a convenient tool in the explanation of economic development just as the other kind of external economies are helpful in determining cost curves of an industry in partial equilibrium analysis.

3. Relative importance of internal economies. Divergent views have been expressed regarding the relative importance of various internal economies. Joan Robinson, Frank Knight and Nicholas Kaldor consider economies arising from indivisibility of factors as the essence of all economies of scale. Kaldor holds that it is methodologically convenient that all large-scale economies are grouped under the heading "indivisibility". Mrs. Robinson goes a step further and writes "If all the factors of production were finely divisible, like sand, it would be possible to produce the smallest output of any commodity with all the advantages of large-scale industry". Professor Chamberlin, on the other hand, thinks that internal economies consist mainly in increased specialisation and use of technologically

<sup>4</sup> This is obviously a strong argument in favour of central planning industries to expand in advance of an industry might be held up by the refusal of related

<sup>5</sup> Maurice Dobb. *On Economic Theory and Socialism*, p. 75

<sup>6</sup> *Economics Of Imperfect Competition*, p. 333

more efficient units of factors. Arguments advanced by Professor Chamberlin are interesting.<sup>7</sup>

Two possible meanings could be placed on "divisibility of factors." It might imply quantitative change. To reduce labour or capital would then mean reduction in the number of labourers or machines. Even if factors be perfectly divisible in this sense, there would yet be economies of scale on account of increased specialisation and well-known advantages of division of labour. Specialisation might also increase with an increase in the number of machines. For instance, if different looms are made to specialise in designs, changes of warps and woofs would be less frequent.

Divisibility of factors might imply a qualitative change. Reduction in labour will then mean employment of less efficient workers. Likewise with machines. In view of factual differences in the skill and intelligence of workers and sizes and designs of machines, this meaning of divisibility is more apt. But even in this sense divisibility does not rule out economies of scale. Only with large-scale production specialists can be employed. When output is small, range of workers out of whom choice can be made is narrow. As the scale extends, choice can be made from a large group of workers and thus there is a greater scope for reduction in costs. This is all the more obvious if we consider the case of machines. A large firm can make a choice out of more machines than a small firm and hence is apt to find one which produces at less cost than any machine available to a small producer.

What appears to be an indivisible unit can be made divisible by sharing it part-time with another producer. But then it may be found that by so doing its efficiency will decrease. Hence leaving it idle for some time is preferred to hiring it out that time, not because it is indivisible but because leaving it idle increases its efficiency.

We may conclude by saying that while all internal economies cannot be summed up in the phrase "economies arising from indivisibility," this group of economies constitutes an important category in the list. Of course economies do not arise due to indivisibility only, but some economies can certainly be attributed to this fact.

#### ECONOMIES AND THE ISOQUANTS

*Economies and isoquants.* In defining an isoquant we assume the methods of production as given and then argue on the basis that with a given combination of the two factors there is only one quantity of output which can be produced. Such a basis is justified only if expansion of the firm is not accompanied by expansion of the other firms or addition of new firms. For, if we were to admit such expansions and additions, we cannot decide *how much* total expansion of the industry to associate with a given increase in the output of the firm.

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<sup>7</sup> *Theory Of Monopolistic Competition* (2nd edition), p. 235-244.

## SCALE OF PRODUCTION

Does it then imply that external economies are ruled out in tracing the iso-product map? The answer depends upon the position which the firm occupies in the industry. Suppose it is a single-firm of the firm. All external economies which are synonymous with expansion of its expansion. In such a case external economies will be the result with the expansion of the firm can be assessed. Hence it is associated as well as correct to take them into account in drawing the iso-product map. On the other hand if the firm in question is one of an enormous large number, expansion of the firm will have negligible effect on the size of the industry as a whole. Hence external economies will be ruled out in drawing the isoquants of the firm. Lastly, if the firm is one among a few firms in the industry expansion of other firms may result from its expansion or expansion of the firm. External economies resulting from the expansion of other firms and addition of new firms will enter in determining the isoquants. But external economies resulting from the expansion of other firms and addition of new firms will not be accounted for because of the reason given above. Hence external economies following the expansion of other firms or addition of new firms will change its isoquants. A new iso-product map will become relevant.

*Economies and diseconomies manifested by isoquants.* Of course along with external economies which result from the expansion of the firm, internal economies have also to be taken into account. When these economies are rising, output increases more than proportionately with the factors of production. We know that production continues to increase, as long as all internal economies have been exhausted. In fact some diseconomies begin to operate after a limit. How do these economies and diseconomies manifest themselves on the iso-product map?

Draw isoquants of equal output-difference. In Fig. 111 isoquants are drawn for 10 units, 20 units, 30 units, 40 units, 50 units, 60 units, 70 units of output.  $SS_1$  is the scale line. As the producer increases his output from 10 units to 20 units, combination of factors moves from P to Q. Output is doubled but factors of production have been less than

8. Of course additional units of factors of production may not do exactly the same work as initial units. There may be extension in division of labour, or labourers may be assigned jobs of supervision so that wastes are eliminated or reduced to the minimum. Increase of capital in agriculture may not lead to a proportional increase in the number of ploughs. Some of the additional capital may go to provide fertilizers fence or wall.

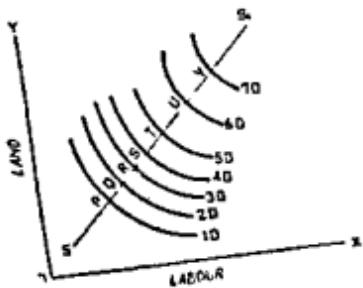


Fig. 111

doubled. Similarly, as he proceeds from  $Q$  to  $R$  and then, to  $S$ , factors of production have to be increased in diminishing proportion. Thus with the operation of external and internal economies which accompany the expansion of the firm, distance between isoquants which equal output-difference goes on diminishing. When, however, diseconomies overwhelm the situation this distance increase progressively.

### ASYMMETRY OF THE LAWS OF RETURNS

*Measure of symmetry.* Are the two laws of returns—the tendency to diminishing returns and the tendency to increasing returns—symmetrical. They would be considered as symmetrical if the explanation of one tendency law in factors which are just the reverse of factors which explain the operation of the other tendency. Let us see.

*Basic explanation of increasing returns.* Increasing returns operate either due to individuality of factors or due to their specialization. As output increases, efficiency of factors is enhanced either by their fuller utilization or by utilization of them for those purposes only for which they are more suited. Quantities of factors already under use, therefore, begin to yield better results. Tendency to increasing returns is thus explained by increase in the efficiency of factors of production.

*Basic explanation of diminishing returns.* Tendency to diminishing returns, on the other hand, is the result of diminishing substitutability of the constant factor by the variable factors. The factor which is kept constant may not be increased because additional amounts of it are not available. This can happen in the case of a completely specific factor, examples of which are rather few. In most cases, the factor is kept constant because additional amounts of it can be procured only at a prohibitive price. Thus the operation of diminishing returns is due to inelasticity or low elasticity of supply of one (or more) factor which implies a sharp rise in its price as more of it is used.

*Explanation of either has no relevance in case of the other.* Law of increasing returns assumes an elastic supply of factors. But elasticity of their supply does not explain the operation of increasing return. The explanation lies in increase of efficiency of factors.

When diminishing returns operate, additional output due to successive increments of the quantities of variable factors decreases. This, however, does not imply that additional quantities employed of variable factors are less efficient. Efficiency of all units of factors is the same whether they are employed earlier or later.

*When would the laws have been symmetrical.* The two laws, as generally enunciated by economists, are, therefore, not symmetrical. A law of increasing returns, symmetrical with the law of diminishing returns, as we have stated it, could be enunciated if, as more of factors are employed, they, as a result of it, became cheaper first and dearer

## SCALE OF PRODUCTION

wards. With cheapness there would be increasing returns and with dearness there would be diminishing returns. Such would be the case if supply curves of factors of production sloped downwards and then upwards. Obviously this is not likely to happen. In this world of ours, price of a factor of production does not fall as more of it is used.

A law of diminishing returns as we have stated is symmetrical with the law of increasing returns as factors are increased. They first become more efficient as division of labour and efficiency increases. Beyond a point such a law of diminishing returns would not be the same as the law of diminishing returns as we have stated.

*Symmetry for an individual producer.* Thus the two tendencies are not symmetrical. An individual producer tends to reduce his costs in the direction of increasing his output. For while there could, however, consider the two tendencies as symmetrical, works in the direction of increasing his costs, tendency to increasing efficiency of an individual producer are opposite. Hence the symmetry is perfect because, while their impacts are opposite they are not equal.

*Asymmetry for the society.* From the standpoint of society, the two tendencies are not symmetrical in any sense. Increasing returns increase efficiency of factors and this helps to reduce cost of output in the society. But diminishing returns are due to a rise in the price of a factor which does not imply increasing costs to the society.

## PRODUCTIVE POTENTIAL

We have seen that a country can increase the size of its national dividend by making the best use of its productive potential—by division of labour, use of machinery, localisation of industry, combination of factors in least cost proportions, and by tuning the business units to their proper scale. In all this discussion we assumed the productive potential, that is, quantities of factors of production, as given. Now we shall discuss the meaning and implications of increasing the productive potential.

### DEVELOPMENT OF NATURAL RESOURCES

*Importance of natural resources.* The size and quality of natural resources of a country is an important determinant of the character of its economy as well as the kinds of products. That agriculture occupies an important place in the economics of India, Australia and Canada, that industry and commerce predominate in the economic life of England, and that the U.S.A. has an economy evenly balanced between agriculture and manufactures, are facts of no mere accident. A country cannot produce jute if it does not have any jute land. Production of tea on any sizable scale is not possible if the requisite type of land and climate are not available. Production of machines, tools and other iron and steel products is easier for those countries which possess rich iron deposits. The extent and nature of mines determine the quantity and quality of mineral products. If India can produce enough mica but no molybdenum, it is not her fault.

*Fixity of natural resources.* The size of soil in a country is more or less fixed. It may be possible to reclaim some soil from sea, but the costs involved are so stupendous and possibilities of reclamation so limited that we can safely assume the physical area in every country as given. What is true of soil, is doubly true of climate, mines, rivers, etc. Gifts of nature remain what they are. It is for man to explore and exploit them.

*Development of natural resources.* Deficiencies in natural resources can to some extent be remedied by human skill and ingenuity. Thus if land has low fertility, artificial manuring may increase it. Quality of land can also be improved by fencing, digging a well, etc., etc. Similarly rivers can be diverted. Even the intensities of climate can be reduced. All such steps are, however, better described as investment of capital. Hence development of natural resources implies investment of capital.

## IMPLICATIONS OF AN INCREASE IN LABOUR POWER

*Hours of work and output* Labour power of a country is constituted of three factors, viz., the size of the working population number, working hours, and efficiency of the workers. The question of efficiency has already been studied. Here we must consider the relation between the length of working hours and efficiency. Even if longer working hours were to increase output, social welfare may not increase and hence dissatisfaction. The loss of satisfaction on this account may exceed the gain in welfare caused by increase in output. What is, however, more important is the fact that longer hours of work are in themselves destructive of efficiency. They reduce a worker's willingness to work. Apart from that they tire out limbs and mind. And as the worker has to work for long hours day in and day out the effect on efficiency is cumulative. Suppose the hours of work are raised from eight to ten. On the very first day output remaining the same) as on the previous day. Thus what he produces in the extra two hours is additional output. But next day he returns to work a tired man and his output even in the first eight hours is affected. As the ten hour work per day continues the first eight hours is and his ability to work falls. Increase in hours of work, is therefore, not certain to increase the labour power or the output of a country.

*Size of population and output* The question of the size of working population is rather ticklish. As the population increases, there is, of course, an increase in the number of workers. The size of one factor of production, i.e., labour is thus larger. But alongside of it, the number of consumers also increases. Growth in population increases the number of working hands but it also at the same time increases the number of mouths to be fed and bodies to be clothed. Increase in the number of workers, therefore, presents a problem of a kind, the parallel of which is not to be found in the case of other factors. When output increases as a result of larger capital, income per head rises. Similar would be the case if land could somehow be increased. But when working population increases and consequently total output also increases it is not certain that output per head would also increase. Studies regarding changes in population have, therefore, focussed attention on the effect of population growth, not on the total output but on *per capita* income.

One study of this kind was made by Thomas Robert Malthus. His conclusions have come to be known as Malthus' Principle of Population. Malthus speaks of "means of subsistence" but does not define the term. Rather than relating population changes to income changes, he studies the relation between relative rates of increase of population and of agricultural output, or, better still, food

Another study relevant to the subject is the Theory of Optimum Population. This is properly a study of the relation between changes

in population and average income. Of course, the two variables are isolated and other factors are assumed as given.

### MALTHUS' PRINCIPLE OF POPULATION

*Origin of the principle.* Malthus' work sprang from discussions between him and his father on the writings of Marquis de Condorcet and William Godwin. The former was propounding in France very optimistic theories of perfectibility of man. The same was being done by Godwin in England. Godwin wrote: "An Enquiry Into Political Justice" wherein he attributed the miseries of mankind to political and social institutions. In the absence of government to and social institutions, Godwin thought, man could live on half an hour's work per day. He based his calculations on the views of Benjamin Franklin who had held that "mind will one day become omnipotent over our bodies and man will become immortal." Enraged by the childish optimism of Godwin and Condorcet, Malthus came out with his book "Principle Of Population" in 1798. In his criticism of these gentlemen Malthus was severe. He held that they were unwilling to face difficulties based on the law of nature that population tends to outstrip means of subsistence. The second edition, containing four times as much matter as the first, appeared in 1803 under a slightly different name but with less stinging contents. It has always been considered advisable to judge Malthus by this edition.

*Statement of the principle.* Social studies must be directed towards studying the question of happiness of mankind. This happiness is threatened by many factors. One of these factors is the "constant tendency in all animated life to increase beyond the nourishment prepared for it." In the case of mankind, this implies tendency to increase beyond the means of subsistence. Malthus lays down three propositions regarding this tendency:

1. Population is necessarily limited by the means of subsistence.
2. Population invariably increases where the means of subsistence increase, unless prevented by some very powerful and obvious checks.
3. These checks, and the checks which repress the superior power of population and keep its effect on a level with the means of subsistence, are all resolvable into moral restraint, vice and misery.

The first proposition appeared in the first edition as a postulate in the words: Food is necessary to the existence of man. The statement cannot be questioned. No writer before Malthus, nor any one after him, did ever claim that there is likely to be reached any stage when man would be able to live without food. Naturally, then, no country can support more population than it has the occasion

In the second proposition he endeavours to find a relation between increase of population and increase in food production consequent upon it. Benjamin Franklin had written that power in plants and animals to multiply is immense. Malthus deduced from this that power of reproduction in man is also very great. Limitations on multiplication of plants and animals were nourishment and space. Man is also confined in room and it is nourishment which is the other limiting factor.

Malthus then proceeds to assess the rate at which population would increase, if it were left to exert itself with perfect freedom. He takes the cases of North America and Back settlements where population had been doubling in less than twenty-five and fifteen years respectively. He quotes the authorities of Euler and Sir William Petty who put the period for doubling of population at 12  $\frac{4}{5}$  and ten years respectively. From these he concludes that a period of twenty-five years is a safe and sure assumption.

When population increases, agricultural output (which he treats as synonymous with food production) does not increase proportionately. By the best policy and greatest encouragement to agriculture, average produce could, at the most, be doubled in the first twenty-five years. This is assuming the maximum increase that reason could admit. This, says Malthus, must be evident to those who have acquaintance with agricultural subjects. And in the next twenty-five years, it cannot be supposed that then produce would be four times lard. At the most it may be three times in the next twenty-five years four times and so on.

The conclusion drawn is that while population increases in geometrical progression, means of subsistence increase only in arithmetical progression. Thus he calculated that in three hundred years, while population would grow 4096 times, food production cannot be more than thirteen times. This proposition represents the heart of his argument. And it is this proposition which is relevant to our discussion. Though he states it in different words, his argument is that every new head that comes to the world brings with it a mouth to feed and a body to clothe and shelter. It also brings two hands to work but not a new slice of land for cultivation. Land continues to remain the same and population increases. As there are more hands to work, the total output increases. But as there are more hands to work, the output per head falls. At the back of his mind is the operation of the law of diminishing returns.

The third proposition directly flows from the first. If man observes restraint, vice may result which may poison the springs of domestic happiness, weaken conjugal and parental affection and lessen attention to the nursing and education of children. If restraint is not observed, it produces misery, poverty and death. If restraint from marriage from prudence is moral restraint and death. If restraint is strictly moral during the period of this restraint provided the conduct is the least evil though it causes some immediate unhappiness.

increase of labour is attended by diminishing proportionate returns.<sup>1</sup> At the point where average product of labour begins to fall, *per capita* income would be the highest. This point has, therefore, rightly been called the point of maximum return or of optimum population.<sup>2</sup> It can easily be illustrated by a curve.

$AP$  is the average product curve of labour for all kinds of industries taken together (Fig. 12.1). Up to  $OM$ , increases in population result in increased average product of labour. Beyond  $OM$ , average product falls. Hence when population is  $OM$ , average product of labour as well as *per capita* income is maximum.  $OM$  is the optimum size of population. *Per capita* income will fall if population deviates in either direction from the optimum. If population is less than the optimum, *per capita* income will rise with an increase in population. If, on the other hand, population is higher than the optimum, *per capita* income will fall with an increase in its size. The extent to which actual population deviates from the optimum is called maladjustment. Degree of maladjustment is measured by the formula:

$$M = \frac{A - O}{O}$$

where  $M$  stands for maladjustment,  $A$  for the actual population and  $O$  for optimum population. When  $M$  is positive, it is a case of over-population. If it is negative, the country is under-populated. And if  $M$  equals zero, population is of the optimum size.

*Effect of changes in data on the optimum.* The concept of optimum population needs to be applied with great caution. It must not be

supposed that optimum population for a country is a fixed size. On the other hand, it is a perpetually changing one. We have explained the concept by assuming knowledge, resources and capital as given. Cannan in the statement quoted above uses the words "at any given time," by which he means that knowledge and circumstances remain unchanged. Discoveries, advance of knowledge, and application of

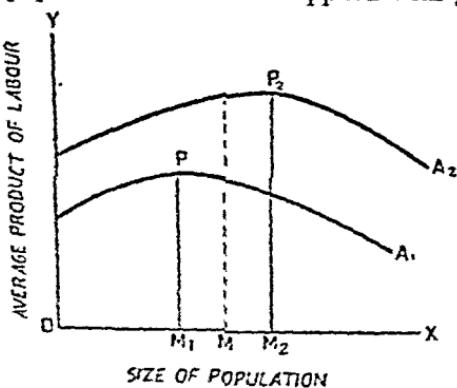


Fig. 12.2.

previous knowledge to new fields, put the point of maximum returns farther and size of the optimum may increase. In diagram 12.2,  $A_1$  is the original average product curve and  $A_2$  the same curve after a change in knowledge and circumstances. Before the change,  $OM_1$  is the optimum; after it optimum increases to

1. Hultzsch, (3rd edition), p. 56.

2. Carr Saunders uses the phrase 'optimum density of population.'

*OM*, If population is *OM* in both circumstances, the country is overpopulated before the change and underpopulated after the change. Hence a country might have been overpopulated in some past year and may be underpopulated today even with a larger population.

**Criticism** The fact of the matter is that in its practical application the concept of optimum population is not very helpful. Suppose a country is overpopulated. We cannot reduce the number by a slaughter, nor can we reduce the birth rate suddenly. Changes in birth rate can come only slowly. If population is optimum we cannot arrest it there. Hence optimum is conceptual. It is not to be thought of as the right size at any moment but as the right rate and direction of change in population over a period of time. But "over a period of time knowledge and circumstances do not remain the same. In fact changes in population are themselves a source of advancement in knowledge and changes in the methods of production. If in any country population had adopted a different course, inventions and discoveries would also have taken a different direction. Thus changes in population themselves change the optimum. How can we then proceed on the basis that population changes while knowledge and circumstances do not change?

### IMPORTANCE OF CAPITAL ACCUMULATION

The sole source of increasing productive potential Land, we have seen, is not possible to increase in size. Increases in labour imply increases in consuming population as well. Capital is unlike both land and labour in these respects. It consists of man made goods which can be augmented. Also, an increase in the number of machines and tools does not by itself imply an increase in the number of consumers. We include permanent improvements on land in capital formation. Expenditure on improving health, strength, and knowledge of the workers is also investment of capital in the workers. Moreover almost all machines are labour-saving. Some of them prove land-saving. For instance, tractors obviate the necessity of oxen and thus save land which would have produced food for them. Capital can thus be utilised to make up, to some extent, qualitative as well as quantitative deficiencies of land and labour. Even otherwise, use of machinery increases output. Hence capital formation is the most powerful method of increasing productive potential.

**Private and social capital** Capital of a country may be divided into private and social capital. Private capital refers to machines, tools raw materials, fuel and stocks of finished goods available for use exclusively to those who own them. Social capital comprises of those assets of the nation which are available to the public at large and which are helpful in increasing production and trade of the country in general. The most outstanding instances of social capital are roads and railways, waterworks and canals, etc. Private capital of course increases production but social capital is no less important. Economic

framework, or some wings of it, may be weakened, and at times paralysed, if assets, constituting social capital, are underdeveloped or unevenly developed. Hence for economic development both, private as well as social capital, have to be increased.

*Determinants of requirements of capital.* Actual capital requirement depends on a number of factors. First, it depends on the methods of production employed. In Indian agriculture, age-old methods being in vogue, capital requirement per farmer is small. If modern methods of mechanised agriculture were to replace these traditional methods, capital requirement would increase. Similarly a cottage worker performs his task with a much less capital than a factory worker. Secondly, capital requirements depend on the nature of the economy. As a rule capital-worker ratio is higher in manufactures than in agriculture. In trade and commerce capital-worker ratio is believed to be still higher because, though machines used are rather few and simple, much capital gets locked up in stocks and in goods in transit. Less capital will thus support lower stages of development and lower techniques of production. Size of capital indicates the stage of economic advancement of a country.

Capital requirement also depends on the size of population. Methods of production remaining the same, if population is increasing, capital also must be accumulated as fast to maintain *per capita* income. In case net increase in capital is slower than net increase in population, capital will fall short of requirements. As it is difficult to shift to lower techniques, unemployment will result. As absolute amount of capital has increased, total output will increase, but output per man will fall. In the case of increasing population, therefore, even to maintain the level of *per capita* income a continuous increase in capital is essential. To raise *per capita* income, accumulation of capital should go faster than the increase of population.<sup>3</sup>

We live in a dynamic world. New machines are continually being invented and new methods suggested. Moreover, a change in the methods of production is not always conditional upon invention of a new method. A number of methods may already be known, some of them being more capital-intensive than others. The more capital-intensive methods will increase output per man, yet they may not be used on account of shortage of capital. Consider, for instance, the following case:

TABLE 12-a

Methods of Production	x	y	z
No. of workers per machine unit	20	20	20
Price per machine unit (Rs.)	100	200	300
Total output (units)	60	100	140
Output per man (units)	3	5	7

3. Obviously in the present state of Indian economy when capital accumulation is rather slow, increases of population are a handicap.

Number of workers being twenty, which of the three methods of production will be employed depends on the amount of capital available. If capital available is Rs 100, method of production  $x$  will be used. As capital increases, method will shift to  $y$  and then to  $z$ . Size of the working population being given, total output, and hence output per head, may be increased only by increasing capital. One reason why methods of production in Indian agriculture have remained unchanged is slow or no capital formation in the agricultural sector and apathy towards it of the non agricultural sector.<sup>4</sup>

*Capital accumulation and economic progress.* It is not impossible to hit upon improvements which reduce capital requirement per worker without affecting output per man. Such inventions are the type which would suit a country like our own where labour is less scarce than capital and where the problem, therefore is to maximise output per unit of capital. In countries like England and U.S.A., periods of very rapid growth have been marked by shortage of labour in comparison with fast accumulation of capital. They, therefore, required labour saving or capital intensive devices. India stands in need of devices which save capital without reducing output per man so that our capital goes a farther distance in increasing employment and output.

Generally, however, improvements in technique of production lead to the use of new machines which are costlier. Such techniques do increase output per head, but they also switch up the requirement of capital per worker. Thus, even if population is stationary, economic progress is vitally dependent upon capital accumulation. The higher the rate of growth of capital, the faster the rise in total output as well as output per man.

Capital accumulation is thus the *sine qua non* of economic progress. Ever increasing amounts of capital are required to equip the increasing population even for a given technique. And the problem is to continuously improve techniques for continuously increasing numbers. Capital accumulation at a fast rate is the need of every country, especially of an underdeveloped country like India.

#### ECONOMICS OF CAPITAL FORMATION

*Creation of saving.* According to Marshall, capital is the result of waiting or postponement of consumption. When a person produces wealth but does not consume it, he creates a saving. Saving is thus the excess of production over consumption. In a money economy it is the excess of money-income over money-expenditure. Consumption or expenditure may not be postponed for ever. Income is saving so long as it is not spent or consumed. The longer the period for which consumption is postponed, the longer the period for which that part of income is to be treated as saving. Saving is thus a two dimensional

<sup>4</sup> Recent symposium in *Economic Weekly* (beginning April 1956) has shown that after a limit increase in capital per worker may not increase output. In the case of countries like India, however, that limit is quite far.

concept, the dimensions being time and amount. But when at a future date a person consumes any part of his past saving, he consumes more than the income. If this act is described as dis-saving, we can treat saving as an amount without reference to period of time.

*An illustration.* Let us imagine a simple economy of an island where there are 20 persons, all living on apples plucked from wild trees. Suppose they all live as a group and every person works for five hours a day and can pluck twenty apples. Now suppose that they decide to produce shepherds-crooks which would help them pluck more apples per hour. One of the following methods may be adopted:

(1) Of the twenty persons, four may be asked to devote their whole working day to producing "crooks," the remaining sixteen continuing to pluck apples. Now, as before, all the twenty shall be working for five hours each but the output shall be 320 apples, that is 16 apples each. In a way each "earns" twenty apples but consumes sixteen, the balance getting embodied in the "crooks."

(2) Every individual may continue to work for five hours out of which four may be devoted to plucking apples and one to making "crooks." Every one of them puts in as much work as would produce 20 apples but gets only 16 apples to consume. The balance will one day become available in the form of "crooks".

(3) Every individual consumes sixteen and lays aside four apples every day. After four days he will have sixteen apples. The fifth day may be devoted to working on "crooks." In this procedure also savings ultimately take the form of "crooks".

In all the above three cases we find that saving results from working and not consuming the whole output of work. There is, however, a fourth method of bringing "crooks" into existence. It is that all the twenty individuals continue to do plucking of apples for five hours as before and devote some additional time to making "crooks". Consumption continues to be twenty apples per head per day. Yet saving, even here, is the excess of production over consumption. The only difference in this method is that instead of cutting down consumption, production is stepped up. This method is of a very great significance in underdeveloped economies where it is difficult to cut down consumption because the standard of living is already very low.

*Saving must be invested.* Shepherd-crooks may have been produced and yet they may not be used for some reason —say, superstition; or, those, who possess "crooks", refuse to lend them to those who know how to use them. Saving then shall have been done but capital shall, for all practical purposes, not have come into existence. It is only when saving is invested that it becomes capital. Marshall ignored this aspect of the problem and treated saving and investment as synonyms. Saving may take the form of jewellery or currency notes and lie in idle hoards.

This latter constitutes leakage from saving. The problem of capital formation is, therefore, twofold first, there is to be saving, secondly this saving has to be invested, not hoarded.

### RATE OF CAPITAL FORMATION

*Fundamental conditions* Two fundamental conditions must be fulfilled for there being any saving at all. These are security of life and property and existence of a stable currency. Given these two conditions, saving depends upon the power to save and will to save of the people. A study of factors which influence power and will to save of an individual family throws enough light on the power and will to save of the community as a whole.

*Power to save* Saving being the anti thesis of expenditure on consumption, power to save of an individual family depends on the aggregate income of the members of the family, size of the family, and the standard of living to which they have become accustomed. If the income increases, or if the size of the family becomes smaller, or if its members reconcile themselves to a lower standard of living, the ability to save rises and vice versa. *Power or ability to save of a community* as a whole depends on the average level of incomes, average size of the family, and the prevalent standard of living. But it also depends on deviations of individual incomes from the average income. If incomes are unevenly distributed, there is a greater scope for saving than if incomes are evenly distributed. This incidentally shows that where incomes are low and evenly distributed so that there are few "very prosperous" or "fabulously rich", it becomes the duty of the State to do the requisite saving for bringing about economic progress.

*Institutional factors* Institutional factors may promote or hinder saving. For instance, if a large number of people find employment in jobs where contributions to provident fund are compulsory, large sums get saved. Similarly, if it is customary to give government bonds or company debentures or shares in dowries to daughters, people have to save and keep their savings in these forms. Though there is an element of circumstantial compulsion in the social factors, yet, as the people reconcile themselves in due course to these acts, such institutional factors may be said to influence the will to save.

*Other determinants of will to save* People may save money because of personal, family, or national considerations. Every individual wants to become rich. For, it is the rich, who generally constitute "the Gentry", can fight elections and win other places of esteem in society. Similarly, the desire to save enough to start one's own business or to enlarge the existing business, as also the desire to provide for one's old age, are powerful incentives to save. Moreover, people want to make provision for education, marriages, and a good start in business for their children. A reserve fund may be sought to be created to draw upon in times of emergencies. Lastly, in the modern world, people may be actuated to save through realisation

In the absence of these facility providing institutions leakage of savings into hoards will be large

*Conclusion* Thus we find that capital formation is a function of many factors. It depends upon the incomes and spending habits of the people, on the social institutions on the outlook on life, on the family attachments, on the existence of peace and confidence, and on the enterprising spirit and capabilities of the people. In case some of these factors are absent, capital formation suffers and the economy stagnates. It then becomes incumbent on the government of the country to actively enter the field and provide incentives or penalties or both to ensure that capital accumulation gains momentum. It is a condition of stagnation in which underdeveloped countries find themselves. This is why most of them have taken to planned development of their economies.

APPENDIX TO CHAPTER XII

## CAPITAL FORMATION IN AN UNDERDEVELOPED ECONOMY

Underdeveloped economies are considered to be potential trouble-spots in the modern world. Problems connected with capital formation in such countries are, therefore, of vital importance for the maintenance of world peace. To Indian students these problems are of special significance since we happen to live in an era of planning which pins its hopes on speedy acceleration of the rate of capital formation.

*Investment opportunities.* It is sometimes thought that, as in advanced countries lands, mines, fisheries, etc., are already in the process of exploitation, there are few possibilities of extensive application of new investment. In such countries investment may at the most seek to make exploitation of resources more intensive. On the other hand, it is argued, in undeveloped and underdeveloped countries there are vast unexploited resources and hence there is a great scope for making new investments. On the basis of these assumptions, conclusion is drawn that while in advanced countries savings are large and investment opportunities are limited, in underdeveloped economies there are vast investment opportunities and the main problem is about saving.

This is not correct. In underdeveloped economies the problem is as much of creating avenues of investment as of saving. In such economies capital market is not well developed. Apart from that, general level of purchasing power of the people is low. There is what we might call the inertia of the market. In fact the general rate of profit in underdeveloped economies is low. Individual industries when given a start do not take off and fail to gain momentum.

There are also some people who hit the other extreme. From the fact of general rate of profit being low they jump to the conclusion that there are no profitable avenues of investment. Even that is not correct. The fact of the matter is that there are many fields for investment. Only all of them must be fed together. It is not shortage of avenues of investment but an all-round shortage of investment itself that needs to be tackled. The problem is one of putting the whole economy into proper gear. It consists in ensuring that there is a simultaneous development in the various wings of the economic framework. If one sector advances and the others lag behind, the latter will create bottlenecks, especially in the form of limited market. Hence in an

underdeveloped economy not only have savings to be effected, they also to be canalised into a pattern of investment which the nation demands. It is for the State to see that investment is so directed.

*Impediments to saving* Nevertheless, creation of savings is a veritable problem because ability of the people to save is very low. Incomes and standard of living are already so poor that cuts in consumption are rather difficult. What saving can we impose upon a people who do not get two square meals a day, who do not have enough clothes to hide their shame, and who do not possess a cottage worth the name? Of course people are content with the low standard of living but incomes also are very low and families large. There are, no doubt, a few rich people but they, like the Pashas of Egypt and the Princes of India, have always revelled in ostentations rather than in sensible investments. While Rockfellers and Fords spend large sums for the education and uplift of the down trodden, Indian princes waste their wealth on races and luxury palaces.

Even institutional factors are anything but helpful. Social values in these communities are such that thrift is not a virtue of any high merit. A man may command respect because he is hospitable or saintly. Thrift is considered to be the quality of misers rather than of nation builders. Joint family system makes assurance unattractive and unappealing. Corporations form rather a small sector in the economy. The only institutional factor which works in the direction of capital formation is the desire to own a house. People save for spending on marriages and law suits—not for augmenting an income. A large proportion of savings is thus interest inelastic.

*Handicaps for investment* Among factors, which handicap investment, may be included extra value attached to possession of land, inclination to sink savings in gold and jewellery, and widespread distrust in the stability of the banks. One factor of note is absence of corporate finance. In most cases the only acceptable avenue of investment is family holding of land. Facilities for investment do not exist. Existence of banks in the country and saving habits of the people are interdependent. Banks cannot prosper and expand unless people take to banking and people cannot become bank minded without the existence of banks. Similar is the case with insurance companies, land mortgage banks, etc. Capital market is undeveloped. Force of inertia is great. All these institutions require a push to make a start and then get going.

*Suggestions* Many suggestions can be made for getting over the initial difficulties. Denominations and maturity of government securities may be made such as appeal to the general public. Even gold and jewellery may be accepted in lieu of loans. In view of stickiness of the people to gold these steps may be supplemented by an appeal to their national sentiment. Efforts have to be directed not only towards mobilising rural savings, but also towards making urban savings available for rural areas. Development of rural areas with urban savings is very important at least in initial stages, because an important layer of the problem of development in underdeveloped economies is to create a marketable surplus in agriculture. This may be explained.

*The question of marketable surplus.* The underdeveloped economy has to produce more capital goods. The labourers employed in producing these goods will get incomes, large parts of which will be spent on food and other agricultural goods which must come from the villages. Even if capital goods are imported from outside, payment for them cannot be made in manufactures since their production is, by hypothesis, small and expensive. They must be paid for in agricultural goods. The problem of industrialisation is, therefore, linked with the problem of creating and increasing agricultural marketable surplus. Hence the agriculturist must be either compelled to consume less or helped to produce more. Agricultural development, therefore, becomes the unavoidable first step in the march of economic progress. Urban savings have to be utilised for the purpose.

*Real source of capital.* This brings us to a very real as well as dependable source of capital formation in underdeveloped economies. One feature common to most of these economies—especially those of the Middle East—is heavy pressure of population on land. The problem is to reduce this extreme overcrowding in agriculture. The difficulty, it is said, lies in finding jobs for those persons and the requisite capital equipment for them. But what is considered to be a liability can easily be turned into an asset. After all capital goods are the result of work. It should be possible to direct the excessive agricultural population towards producing capital goods, making a start with simple tools which may be further used to make more complicated tools and machines. Such a course will serve the dual purpose of reducing pressure on population as well as increasing the availability of capital goods.

How shall the production of these capital goods be financed? Of course wages have to be paid to the workers. And as the workers have to be attracted from their old occupations, wages in the new occupations must be attractive enough. A part of these wages will be spent on food and other agricultural products. As a result of decrease in the pressure of population on agriculture, output may increase. We can, any way, safely assume that it does not decrease, as a result of it. It is, however, the duty of the government to make available to agriculturists modern tools and implements, good seeds, more fertilizers, and irrigation facilities. Its other duty is to ensure that a sufficient proportion of agricultural output flows to towns and industrial areas. For that purpose the government may collect land taxes in kind and sell the proceeds in urban areas. The government may also take to a propaganda campaign as a result of which agriculturists consume more of industrial goods. Another step could be to make those industrial goods available to villages at higher prices for which demand is inelastic, and those industrial goods at lower prices for which demand is elastic. Upon goods with inelastic demand agriculturists will spend more at higher prices. Upon goods with elastic demand, they will spend larger amounts at lower prices. This

two-pronged policy will make the villagers pay a larger aggregate amount of agricultural goods for their industrial purchases

*Role of the government* In two respects the government of an underdeveloped country has a special role to play. The initial outlays on items of social capital are large while direct reward to the investor is small and spread over long periods. The government has to take the responsibility for these on its own shoulders. Extension in transport and irrigation facilities as well as making water and power available, is the first duty which devolves on the government. Secondly, *in view of the inadequacy of voluntary savings, it must take steps to induce people to save more.* Such steps may be supplemented by a concealed compulsion to save by printing of notes. The government may finance the production of capital goods with these notes, thus diverting resources towards production of capital. Production of consumption goods is reduced and prices rise. To some extent rise in prices may be desirable to provide incentives to producers for expanding their production. But rise in prices beyond a limit is dangerous. Apart from other evil effects it has two adverse effects on savings.

(a) As people find prices progressively rising and money becoming cheaper, they save less because they realise that saved sums will have less value at a future date.

(b) Businessmen put a part of profits in the depreciation fund on the basis of prices at which they purchased machinery. As prices rise, prices of machinery also rise. When it comes to actual replacement of machinery, the producer finds his depreciation fund small for the purpose. This is an undeliberate dissaving resulting from faulty methods of keeping accounts.

Thus the second duty of the government of diverting resources by printing more notes has to be performed with caution. Rise in prices must be kept within limits.

## CHAPTER XIII

# MARKET FORMS

### MEANING OF MARKETS

*Supply and demand refer to a market.* In our discussion of the theory of demand we determined the shape of a typical demand curve and formulated the law of demand. All the time we assumed that at a certain price while there are certain buyers who purchase certain amounts of the commodity, there are some others who do not. The latter would buy if the price could be brought within their reach. Obviously in all this discussion we have in mind a number of actual as well as prospective buyers. Similarly in a discussion about the supply of a commodity we would have in mind a number of actual and prospective sellers. Actual and prospective buyers and sellers of a commodity constitute the two elements of a market.

*Definition of a market.* The concept, however, requires further elucidation. Buyers of bricks at Delhi are not the buyers of bricks produced at Bombay. When, therefore, we draw a demand schedule for the bricks produced at Bombay, we do not include the demand of the buyers at Delhi. The reason is that the buyers of Delhi are not in competition with the buyers of Bombay. Similarly, for drawing a supply schedule of bricks at Bombay, we do not include the producers of Delhi, since they do not go to compete with the producers of Bombay. Hence, while the buyers and sellers of a commodity constitute a market, it is competition which holds together these constituents of it. Those buyers and sellers who fall outside of the purview of competition in a given area fall outside of the scope of that market. A market may, thus, be said to be constituted of buyers and sellers of a commodity who are in direct competition with one another. That is, when the supply and demand conditions of a commodity in one area influence the supply and demand conditions of it in another area, the two areas are said to be in the same market.

In day-to-day parlance, the word market is made to refer to a place where the commodity, the buyers and the sellers are physically present. But this is not an essential characteristic of a market in the economic sense of the term. Goods may be bought and sold through agents. Orders may be placed by post, telephone or telegrams. The commodity may be stocked and delivered in a different place than where the rate is settled and bargain struck. A market, thus, has nothing to do with a specific locality. Buyers and sellers may be spread over a wide area, sometimes as wide as the world itself. Yet in so far as they are in competition, they constitute one market. The fact of competition is enough to bring the buyers and sellers within the purview of a market irrespective of the fact of their residence:

### PERFECT MARKET

**Meaning.** A perfect market is one in which the law of market holds good. This law states that in the same market at any given time there can be only one price of the same commodity. Suppose any one of the sellers in a perfect market begins to charge a price lower than what others are charging. He would be flooded with orders. If his stock is small, it would be soon exhausted. If his stock forms a large proportion of the total stock of the market, his action might compel others to lower the price. It is also possible that the rush upon his depot induces him to raise his price. In any case, the difference in price cannot remain. On the other hand, if any seller decides to sell at a higher price than others he will not be able to sell anything because the buyers would prefer to purchase from others at a lower price. He shall have to lower the price. Once again the difference will disappear.

**Conditions for a perfect market.** Perfect market will exist when two conditions are fulfilled, i.e., movements of the commodity do not encounter any friction and secondly, there is no product differentiation. Let us consider the implications of these two conditions.

1. *Absence of friction.* Frictionlessness of the market means that if price ruling in part A of the market is higher than that in part B, immediately supplies are rushed from part B to part A and the difference in price disappears *instantaneously*.

This requires, in the first place, that buyers and sellers are aware of what is happening in different parts of the market. If a difference in price arises, dealers on both sides immediately come to know about it. This knowledge on the part of people in one part regarding price, demand, and supply in other parts comes through means of communication. In a perfect market there has to be a continuous flow of news in all directions.

When a difference in price is known, supplies have to be rushed from those parts of the market where price is low to those parts where price is high.<sup>1</sup> Such physical movements of goods require that there are extensive and efficient means of transport and that there are no restrictions placed by the government on such movements. Transport takes some time and because of that difference in price may continue for an interval. Also transport involves costs and this may introduce differences which stay on. Marshall held the opinion that differences up to the extent of cost of delivering the goods to different purchasers may exist and yet the market may be considered perfect. There is much sense in this suggestion because the differences are intrinsic to the situation. But the fact of cost of transporting is a frictional force which lets differences continue uncorrected. So, theoretically at least, a completely perfect market is one in which goods

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1. The sellers may perform this function, or the buyers themselves purchase where price is low and carry goods 'home' for consumption.

can be transported without costs and without any loss of time. Similarly government restrictions violate perfectness of the market. If these restrictions take the form of taxes, such charges may be included in the cost of transport to have an idea of the extent of imperfection of the market. If, on the other hand, government prohibits the movements of goods from one part to the other, then imperfection is complete and the two parts constitute different markets.

Thus a market is frictionless if means of transport and communication are so developed that news flow continuously from every part to every other part of it, and the commodity can be transferred from any one part to any other part without any cost or loss of time.

2. *Absence of product differentiation.* Buyer's preference for the product of one firm to that of another is called product differentiation. So that market is perfect, it is imperative that no buyer has any reason for preferring the product of one firm to that of another except on grounds of price. For, if there are any such reasons, then a seller whose goods are preferred will find himself in a position to charge a higher price than others and the buyers will stick to him in spite of it. The difference in price will continue to exist.

Absence of product differentiation requires that products of various firms are physically exactly similar and also that consumers do not differentiate between them on the basis of trade marks or the location or reputation of the firms, and the like. A buyer while making a purchase takes into account not only the quality of the commodity but also its shape, presentation, packing, courtesy shown by the salesman, nearness of the store, etc., etc. What he, therefore, really purchases at a time is a bundle of utilities. Absence of product differentiation implies that either every single one of these utilities is equal in all cases or that merits and shortcomings balance in every bundle.

Product differentiation is differentiation between products of different firms, for whatever reason. Now this reason may be real or fancied. Even if every unit is similar in all respects but the buyers on account of some imaginary reasons prefer one seller to another, product differentiation will be in existence. There will be no product differentiation only if the buyers consider different units on sale in the market as perfect substitutes of one another in every way.

### COMPETITION

Competition is the race of buyers against buyers and of sellers against sellers in the acts of purchase and sale, respectively, of a commodity. The race of buyers against buyers in purchasing a commodity manifests itself in their overbidding one another. We come across an illustration of it in almost every auction. We also notice the tendency of overbidding for tonga hirings on festivals when people stream from all sides towards a single destination, i.e., the fair grounds.

Competition among sellers manifests itself in their underbidding one another when buyers are few. An illustration of it is generally come across on tonga stands when a number of coachmen try to attract a customer who happens to drop in.

For our purpose competition among sellers is more important. In a large part of our analysis we shall assume existence of perfect competition among buyers and vary the nature and extent of competition among the sellers and study the implications.

### PERFECT COMPETITION

**Definition** Perfect competition is said to prevail in a market when the demand for the output of each producer is perfectly elastic. It means that under conditions of perfect competition the sale of an individual seller undergoes a very large change if he changes his price a little. To be more specific, if an individual producer raises his price a little, his sales will contract to zero. On the other hand, he can extend his sales up to unlimited amounts by an extremely small reduction in price. In fact this reduction might be even as low as zero. In other words, he can sell any quantity at the price prevailing in the market.

*Perfect competition and revenue curves of individual firms.* Perfect competition is thus synonymous with perfect elasticity of demand for the product of every individual seller. This fact has an important bearing on the position and slope of marginal and average revenue curves of individual firms. Elasticity of demand for a seller's product being perfect, he can sell any quantity at the same price. Suppose the price is Rs 10 per unit of commodity, his revenue schedules will be as under:

TABLE XIII-a

Amount (Units)	Price or Average Revenue (Rs)	Total Revenue (Rs)	Marginal Revenue (Rs)
1	10	10	10
2	10	20	10
3	10	30	10
4	10	40	10
5	10	50	10

As the seller sells every unit at the same price, average revenue equals price. For every amount price is the same, therefore, average revenue is the same whatever the amount. Also, average revenue and marginal revenue are equal for every amount.

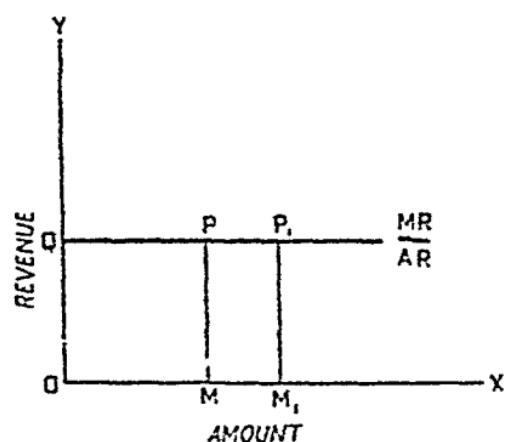


Fig. 13.1.

In mathematical parlance it means that average and marginal revenue curves coincide and the resultant curve is a straight line running parallel to the  $x$ -axis throughout its length at a distance represented by the price. In Fig. 13.1 When the amount sold is  $OM$ , both marginal and average revenue are  $PM$ . When the amount sold is increased to  $OM_1$ , marginal as well as average revenue is  $P_1M_1$ , which is equal to  $PM$ . Thus  $MR/AR$  is the marginal as well as average revenue curve running parallel to the  $x$ -axis at a distance  $OQ$  which measures the price.

*Conditions of perfect competition.* Thus the criterion of perfect competition that elasticity of demand for the product of an individual seller is infinite also means that the average and marginal revenue curves of each firm coincide and run parallel to the  $x$ -axis. Under what circumstances will this happen? In other words, having decided upon a meaning which we attach to the term perfect competition, we now attempt to enumerate the conditions which will make competition perfect. There are two such conditions.

1. *Large number of buyers and sellers.* The number of sellers and buyers is so large that the sale or purchase of any one of them forms an insignificant fraction of the total output of the industry. Contribution of an individual buyer or seller to the aggregate purchase or sale in the market is comparable to a drop in the ocean. Otherwise competition will not be perfect. If the output of an individual producer forms a significant proportion of the total output, any increase or decrease in the size of his output will be a significant increase in the total quantity marketed and hence the price will change. If he tries to sell more, the price will fall. The criterion that he can sell any amount at the prevailing price will not be satisfied. On the other hand, if his is a very small output as compared with the aggregate output, an increase (or decrease) in his output will have no effect on the market and for him the price will be a given factor at which he can sell whatever amount he likes. When the number of sellers is very large, an individual seller cannot influence market price by his own actions. He has to take price as given by every buyer. This is what is meant by saying that

in perfect competition every buyer and seller is a "price-taker" not a "price-maker"

**2 Perfect market** The second condition to be fulfilled is that the market is perfect. As we have already discussed, this implies that the market is frictionless in respect of information as well as movements of quantities of the commodity from one part of it to another. Also, products of all sellers are identical in the estimation of the buyers and all of them are prepared to shift their purchases from one seller to any other in response to even the slightest change in price. In other words, there is no product differentiation and price is the sole determinant of buyer's choice as between sellers.

*Perfect competition is neither usual nor ideal circumstance.* Competition will not be perfect when the number of buyers or sellers is not very large or when the market is imperfect. In most cases it is the imperfection of the market which makes competition imperfect. News are not instantaneous, nor continuous nor comprehensive. Means of transport, however efficient, are neither co-extensive with the whole area, nor a timeless, costless affair. Governments also impose restrictions every now and then. Products of different firms are not exactly similar. And even when they are similar, buyers may not accept them as equally good. Perfect competition is thus a rare phenomenon.

If a perfectly competitive market is not the usual variety, it is not an ideal circumstance either. Yet in the study of many economic problems we make the assumption of perfect competition because it is a very convenient device for economic analysis. Though it is an assumption which takes us away from the real world, yet this assumption equips us very well for understanding the problems of the real world.

### MONOPOLY

**Definition** The word monopoly is composed of two syllables, mono-and poly, which respectively mean "single" and "selling". Literally, therefore if there is only one seller of a commodity, he holds the monopoly of that commodity. Some economists have defined the term in that fashion, but such a definition is not appropriate to economic discussions. Tatas produce Jamam and none else can use the trade-mark. But there are other firms which are producing the same or similar commodities under different trade-marks and are undoubtedly rivals or competitive to Tatas. Every electric supply company is said to hold monopoly in its own area of operation but its control over the market is jeopardised by the existence of sellers of kerosene and calcium carbide which are alternative sources of light. The important question to be answered is whether a single firm industry is a case of monopoly even if there are firms producing close substitutes.

It is better to define monopoly as the absence of competition, as a result of which the monopolist has a control over supply, and hence price, of a commodity. If this control rests completely with a single seller, we get a case of absolute monopoly. The power of the monopolist over the supply and price of the commodity is weakened if there are in existence close substitutes being sold by other firms. Absolute monopoly implies complete absence of competition. And when close substitutes are being produced by others, rivalry or competition in the market does exist and the monopolist is not the master of all he surveys. If a firm is the sole producer of match-boxes in a country, it has the option of producing more or less so as to sell at a lower or higher price. As there are no other sellers of match-boxes, the supply of this firm is the total market supply. But there the matter does not end. Match-boxes get some competition from cigarette-lighters. To that extent the power of the firm in question is incomplete and it does not constitute a case of pure monopoly. In technical language, we may define absolute monopoly as a single firm industry where cross-elasticity of demand between the product of this firm and any other products in the economy is zero. An example of absolute monopoly in India is found in the government being the sole producer of telephone receivers. Neither is there any other producer in the country nor is there any close substitute of a telephone receiver.

Absolute monopoly may be distinguished from limited monopoly. It may be that a firm is a single producer of a commodity and thus has the power of raising the price by restricting its supply. But this power may be limited by the threat of new entrants into the field. Up to a limit he may raise the price without any fear of jeopardising his position as a monopolist. But if he raises the price above that limit, other firms may set up factories and begin producing the same or similar product. Or, it may be that foreign products are being held in check by high costs of transport and import duties. As soon as price rises above a level, imports begin to pour in. In such a case the single producer holds a monopoly and has the power to raise price provided the price does not exceed the "limit". This is an illustration of limited monopoly.

We may also refer to the case of monopoly in a many firm industry. If all these firms form some kind of a "Combination" so as to fix the price or restrict supply, a monopoly emerges. If the combination gives rise to a single selling agency, the fact of monopoly is obvious. If the firms retain their identity not only as producers but also as sellers, it is still a case of monopoly if they observe the terms of combination in letter as well as in spirit. Such a monopoly may be called a virtual or a voluntary monopoly. Of course, in the cases of both absolute as well as voluntary monopolies, we assume non-existence of close substitutes.

If we define a commodity as a group of close substitutes, absolute monopoly would be synonymous with a single-firm industry.

For, our two conditions for absolute monopoly—single producer and absence of close substitutes—would then be fulfilled by such a firm

*Sources of monopoly power* A monopoly would come into existence and would continue to exist in an industry if there is some barrier in the way of new firms entering the industry. This barrier may be supplied by geographical conditions, nature of the industry, laws and policies of the government or deliberate act on the part of the producers. In case geographical conditions or nature of the industry cause the barrier it is called a natural monopoly. Monopolies created by the laws and policies of the government are legal and social monopolies. If the barrier is created by the producers themselves, it is a voluntary monopoly.

1 *Natural monopoly* There are two possible ways in which geographical conditions may impose barriers to entry. Strategic raw material may come under the control of a single firm. For instance India is more or less the only country to possess extensive mica mines. If the control of these mines were to somehow pass into the hands of a single firm, the firm would be a monopolist in mica. Secondly in an area the source of raw material may be acquired by a single firm and other sources may be so distant that the firm does not get any competition from them. The barrier here consists in high cost of transport and hence it is a case of limited monopoly.

The industry may be such as requires huge initial investment which only few firms can afford. It may be that a single firm makes a start and the other firms do not dare take risk of entering the industry and suffering considerable losses by competition. Also beginnings are generally on a smaller scale. If the economies of large scale production are very great, an existing large firm may have no difficulty in strangling the new entrants to death as the latter start on a small scale.

2 *Legal and social monopolies* Proper regulation of social life demands that certain individuals and firms are allowed the monopoly of their product or the use of their trade mark. He who invents a new product or a new method of production is given a patent right over the production of his method for some period. If he is the inventor of a product which does not have any close substitute, he comes to hold an absolute monopoly during the period of his right of patent. Similarly, if the new method of production reduces the costs so low that other producers are compelled to quit the field, he will become a monopolist. In case, however, there are substitutes of the new product or the old producers continue in the industry, monopoly does not come into existence.

Multiplication of firms in some industries may mean needless waste of national capital. This is the case with railways, telephone, telegraph, water supply, electric supply, and the like. For instance,

if two firms are permitted to supply water to a given area, both will lay their own pipelines which is a needless duplication, and hence a waste of investment. In such cases either the government takes over the sole of control of production and supply, or grants monopoly rights to some firm. Such monopolies are social monopolies.

3. *Voluntary monopolies.* Some social institutions have the germs of their own destruction within themselves. Severe competition is one such thing. When rivalry in the market reaches a pitch that sellers under-cut each other to even below their costs, it becomes what is called cut-throat competition. Sellers then incur heavy losses. Many get eliminated and the few who are left are compelled sooner or later to come to some kind of an agreement or form a combination. As already remarked, combinations are virtual or voluntary monopolies. There are several forms of agreements and combinations.

(a) *Gentlemen's agreement for price.* Agreement among producers may take the form of "gentlemen's agreement" regarding minimum price. No producer, then, is expected to charge a lower price than the agreed minimum. To ensure that the spirit of the agreement is not violated by concessions in the form of trade discounts or credit facilities, a "gentlemen's agreement" also generally contains uniform rules of conduct in these respects. A "gentlemen's agreement" may also take the form of restricting the aggregate output and apportioning it among the various producers. This is an indirect method of raising the price and profits of the firms. A "gentlemen's agreement", whether it is in respect of minimum price or maximum output, is obviously open to easy evasion. Cash memos issued may be for prices higher than those actually charged. Similarly cash memos may not be issued at all in some cases and thus the books may be made to show sales much less than the actual.

(b) *Pooling.* Another form of agreement is the pooling arrangement. Pooling may be done in respect of quantity, quality, area or time. When the aggregate quantity to be produced is decided upon and is pooled among the producers, the arrangement is no different from the "gentlemen's agreement" for maximum output. Pooling the different qualities means that various kinds and grades of the commodity are distributed among the firms so that a given quality is produced by one firm only. Pooling of area is more practicable. The market is divided into segments and every firm is assigned one segment. Similarly, distribution of period of production among firms is pooling by time. In this arrangement only one firm is active at any given time. Needless to add that pooling arrangement may be done in respect of more than one factor. Thus there may be such a pooling of time that a number of firms produce during every period, each firm producing a given quantity, or quality, or for a given segment of the market. Pooling arrangements also are easy to evade. Hence they have seldom worked for long.

(c) *Cartel.* Producers within an industry may form a central association and transfer to it some functions of management with a view to improving profit position of the firms. Such an organisation

is called a cartel. The number and nature of functions of management assigned to a cartel are not the same in all cases. It may be given a complete control in its sphere. In such a case it will have the power of making decisions regarding price in the market, output of different firms, sales in different parts of the market, and the shares of different firms in profits. On the other hand, a cartel may have very limited functions and may simply serve as the central selling agency. A cartel is an association in respect of sales only. Firms continue to enjoy freedom in the sphere of production and remain independent of one another. Moreover, members have the option to withdraw whenever they feel dissatisfied with its working. Hence decisions in a cartel can be arrived at only by discussion, negotiation, persuasion and compromise. The principle of rule by simple majority is generally not workable. Of course, economic power of an individual firm is an important determinant of its power to influence the policies of the cartel.

(d) *Trust* A trust is a corporate organisation which takes over the stocks of the component firms and becomes their trustee. It may be formed by a meeting of representatives of the firms where all agree to surrender their individuality. It may also be formed by a single firm acquiring the controlling interests of all the firms. Like a cartel, it aims at raising the price by exercising monopoly power. But it is different from a cartel in that while the latter is a terminable association, the former is a permanent combination. In a cartel the firms continue to be independent but a trust is a complete merger and the individual firms lose their identity. A single body controls the whole policy and makes decisions both in respect of production as well as marketing. Thus a trust is in a better position to reap all the advantages of large scale production, especially by the division of managerial functions among experts, bulk purchases and the like. It has the option of closing down obsolete plants and working only the efficient ones. Thus formation of a trust reduces costs though this reduction in costs may not mean any benefit to the consumer.

### IMPERFECT COMPETITION

*Imperfect competition is the common market form.* As we have seen, perfect competition implies complete absence of any element of monopoly power and, on the other hand, pure monopoly means the absence of competition from other sellers. From this we should not conclude that elements of competition and monopoly are exclusive to each other. In fact perfect competition and monopoly are the two extreme positions and between them may be interpolated a large number of other situations in which elements of monopoly and competition are variously mixed. In the real world we rarely come across situations of perfect competition or pure monopoly. What we mostly encounter are "monopolistic competition" or "competing monopolies". All such situations may collectively be called cases of imperfect competition.

*Causes of imperfection.* We know that there are two conditions for competition to be perfect, viz., very large number of sellers and perfect market. If either of these two conditions is not fulfilled—and it is not a case of monopoly either—competition will be imperfect. We know that market is perfect when it is frictionless and there is no product differentiation. If the market is not frictionless, we may treat different parts of it as separate markets. Therefore, for our purpose two factors which may make a market imperfect are smallness of the number of producers and product differentiation.

*Kinds of imperfect competition.* When there are only two firms in an industry, neither of them is a monopolist because there is some competition. On the other hand, competition is not perfect because either of them can influence the market price by increasing or reducing its output. Thus both have a partial control over supply as well as price. This is a case of duopoly. Another interesting case is that of price leadership. Here there are a number of firms but one (or two) of them produces such a large proportion of the aggregate output that if it changes the size of its output, it has an appreciable effect on the total supply, and hence price, in the market. Other firms are too small for that purpose. This single firm then possesses price leadership.

We shall, however, concern ourselves with only two categories of imperfect competition. One is monopolistic competition. Here the number of sellers is large but there is product differentiation by the buyers. Competition between any two sellers rests not at a price but at a price-difference. Some buyers may stick to a seller even if he is charging a higher price than others, provided the difference does not exceed a limit. Thus a seller is not in a position to fix the price at whatever level he likes. Within a limit he may do so. Beyond that limit he will lose his whole custom to others.

The other is the case of oligopoly where the number of firms is not large, so that elasticity of demand for the product of an individual firm is not perfect. When any of the firms changes the size of its output, it represents a significant change in the aggregate amount marketed and hence changes the price in the market. Other producers are then obliged to change their price and outputs accordingly. Individual sellers are not thus independent of one another as they are under perfect competition. Firms in an oligopolistic industry may be producing products which are identical in the estimation of the buyers. It would then be a pure oligopoly. If smallness of number of sellers is accompanied by product differentiation also, it would be a case of differentiated oligopoly.

## DIFFERENT MEANINGS OF PERFECT COMPETITION

*Our guiding considerations.* The term perfect competition has been differently defined by various writers. Consequently hardly ever do treatments of the term in any two books tally. In deciding upon the conditions of perfect competition we have been guided by two considerations. First, it is realised that it is neither the usual nor the ideal state of affairs. It is an assumption made to drop out unnecessary details and to equip oneself for more easily comprehending the actual state of affairs. Secondly, this assumption is made in such a way that we can easily contrast it in its essential details from its anti-thesis, that is, monopoly.

*Other opinions.* Professor Frank Knight would reserve the term perfect competition for a market in which ideal conditions of fluidity and mobility of factors of production obtain so that the number and sizes of firms can freely increase or decrease.<sup>2</sup> According to him, free entry and exit of firms is the criterion of perfect competition. Professor Chamberlin distinguishes between pure and perfect competition.<sup>3</sup> Pure competition is unalloyed with monopoly elements. Monopoly means control over price and supply by a single seller. Pure competition means absence of any such control in any degree. This will happen when the number of sellers is so large that no single seller can influence the price in the market. Also, all sellers produce goods which are considered identical by the buyers. Thus Chamberlin's pure competition is very nearly the same thing as our perfect competition. He uses the phrase perfect competition in the sense of ideal conditions—fluidity and mobility of factors, instantaneous adjustments, perfect knowledge about the future, etc. This conforms to the criteria suggested by Knight. Mrs. Joan Robinson, in her article "What Is Perfect Competition?"<sup>4</sup> defines it in terms of perfect elasticity of demand for the product of every individual producer. She enumerates two conditions for its existence. First that there are a large number of sellers. Second, that the market is perfect which will be so if buyers are aware of the various price offers and they have no reason to prefer one seller to another.

When we discuss conditions of equilibrium under perfect competition, we argue that when profits are above normal, new firms will enter the industry and when profits are below normal some of them will quit.<sup>5</sup> This we all do. Hence conditions of free entry and exit are assumed in perfect competition. But free entry and exit are also assumed in monopolistic competition. Otherwise how could we come to the conclusion that profits in such a market are normal?<sup>6</sup>

2 *Risk Of Uncertainty And Profit*

3 *The Theory Of Monopolistic Competition*

4 *Collected Papers*

5 See Chapter XV

6 See Chapter XVII

Free entry and exit of firms is thus not a condition peculiar to perfect competition.

There is no reason for us to be apologetic for retaining the use of the word perfect competition in line with Mrs. Robinson's usage. We have to choose either the one or the other.

Mrs. Robinson holds that there need not be a large number of buyers; it is enough that the number of sellers is large. In fact it all depends upon on which front we mean the competition to be perfect. If it is perfect among sellers only, then it implies that the number of sellers is large and the number of buyers may or may not be large. Similarly if competition among buyers is perfect, then the number of buyers must be large; that of sellers need not be large. When, however, we speak of perfect competition without any reference to buyers or sellers, we always use it in the sense of its being perfect on both the fronts. Not only that. Unless a specific mention is made, it means also that competition is perfect in the market for factors required for the industry.

Mrs. Robinson does not consider frictionlessness as an essential condition for a perfect market. But of what use is the awareness on the part of buyers about the price-offers in different parts of the market if goods cannot be moved from one part to another. In addition to efficient means of communication, there must be efficient means of transport. And there must not exist any government restrictions on the movement of goods within the market. In fact, perfect competition is a situation in which forces of supply and demand can exercise their influences fully and freely. Hence there must not be any restrictions imposed by the government on price, production or even purchases.<sup>7</sup>

Lastly, Mrs. Robinson allows physical differences in commodities but holds that buyers do not differentiate as between sellers. She thus thinks that assumption of production of identical units by various producers is not necessary, and that we need only assume that no buyer has any predisposition in favour of any seller and goes by quality and prices of products. Now, we have pointed out that two products are different when buyers consider them different. Cause of differentiation may be real or fancied. If some buyers consider the output of a firm superior in physical qualities, though in fact it is not, it would be difficult to say whether this is physical differentiation or predisposition. Moreover, in monopoly we assume that the units produced are identical. Do we mean to distinguish perfect competition from monopoly on this score? Obviously this is no part of the essential difference. The essential difference between the two is that of competition being perfect and competition being non-existent. Lastly, our purpose being to use perfect competition as a convenient tool of study, it is better that we assume products being identical so that we can study the determination of equilibrium price and output under such conditions. Differences made in the situation by differentiation may then be studied under the heading monopolistic competition.

CHAPTER XIV  
THE COST CURVES  
MEANING OF COSTS

*Real cost and money cost* The amount of a commodity which a producer will produce and supply, given the price, depends on the cost of producing it Land, labour, capital and enterprise participate in the process of production Land is a free gift of nature and thus is not an item of cost to the society Labour and enterprise consist of efforts while capital results from work and postponement of consumption or waiting Cost of a commodity in the ultimate analysis, thus consists of efforts and waitings which have directly or indirectly gone into producing that commodity This is real cost We are, however, to consider costs to a firm in a money economy By costs, therefore, we shall mean money costs of the firms Money costs are the values at market rates of the factors of production employed Cost of production of a commodity to a firm may be defined as the sum of supply prices of the factors of production employed by the firm in producing that commodity

*Opportunity cost* One method of finding the value of these factors is to find the value of the best alternative product which these factors could produce The amounts of factors of production available in a country are limited There are various uses to which they can be put If given quantities of factors are employed to produce commodity A, then commodity B which these factors could produce has to be foregone The quantity of commodity B which is thus foregone is, in a sense, the cost of producing commodity A This is called opportunity cost Opportunity cost of a given product is the quantity of the alternative product which could be produced with the same quantities of factors of production If a farmer has a choice of producing either wheat or barley and produces wheat, the cost of wheat produced is the amount of barley which could be produced instead The concept of opportunity cost is very useful in economic analysis in various ways We shall, for instance, make use of it in studying the nature of rent In respect of costs of a firm, importance of opportunity cost lies in the fact that the producer must make payments to factors of production at least at the rates which they could earn in the production of the best alternative product

*Explicit and implicit costs* Factors of production used by a producer may not necessarily be engaged from outside Some of them may be owned by the producer himself He has to make payments for factors purchased or hired from others These payments are called paid-out costs or explicit costs For factors owned and used by him, he has not to make any payments to anybody But payments which are due on account of these factors at market rates are not all the same For, if the producer did not employ these factors, he could hire them out at the market rates By using them, he

himself he foregoes these earnings. Hence they represent costs which are called implicit costs. In computing the cost of production of a firm we take into account both the explicit as well as implicit costs. Implicit costs include rent of land and interest on investment subscribed by the producer, wages for the services of the members of his family, and his salary for management. The last item is the amount of money which he could earn as an employed manager. If it is a corporation, interest on share money should be considered as an item in implicit costs rather than as a part of profits.

*Assumptions behind cost curves.* We know that there is not one fixed proportion in which factors must be combined to produce any given output. For every size of the output there are a number of such combinations. In tracing the cost curve of a firm, we assume that the producer employs the combination which costs him the least. In our iso-product curve analysis we have seen that even the least-cost combination for any output is not a fixed one. It changes with changes in the prices of factors. If labour becomes cheaper, a new combination using more labour and less of other factors becomes least-cost combination. Similarly, if land becomes cheaper, combination with more of land would be preferred. Given, however, the prices of factors, there is only one least-cost combination for every output. In the discussion of costs of a firm we take market prices of factors as given.

In estimating the costs of a firm we also assume knowledge of techniques as given. This of course means that new inventions do not take place. But it does not imply that there is only one method of production—one kind of machines, tools, and only one technique—known to the producer. There are a number of methods known to him. For a given output, there is generally only one method which is the least-cost method. When the size of the output is changed, a new method may be used. This method was already known but was not used because it was not suitable for the other size of the output.

*Inclusion of normal profit.* That in the cost of a firm wages and salaries, interest and depreciation charges, hire for furniture, etc. and rent for the land and building, should be included—is agreed on all hands. Economists, however, also include in costs what they call normal profit. Normal profit is defined as the level of profit at which neither the existing firms have a tendency to leave nor new firms to enter the industry. Levels of normal profit are different for different industries. Where initial investments are large or where it is otherwise difficult to enter the industry or where the trade is not considered respectable, normal level of profit is high and *vice versa*. In industries where risks and hazards are similar, normal profits are equal.

*Total, average and marginal costs.* It is self-evident that total cost output is a function of the output. As output is increased, total cost also increases. A total cost curve will, therefore, invariably slope upwards to the right.

In the determination of price and output we are more concerned with average cost and marginal cost. These terms are defined in the usual way. Average cost is total cost divided by the output. Marginal cost is the difference made to the total cost if the amount produced is reduced (or increased) by one unit.

The positions of average and marginal cost curves depend, among other factors, on the period of time under consideration. In this respect a distinction is made between "short period" and "long period". As it is the short period which presents special problems, the meaning and implications of it may be examined first.

### SHORT PERIOD

*Definition of short period.* Let us start with a position where a firm is fully using its plant. Now suppose the demand increases. Output can be increased only by increasing the productive capacity, i.e., by putting up more plants or a bigger plant. The producer will not—in fact he cannot—immediately adjust the productive capacity to increased demand. He will first try to ascertain whether the increase in demand is of a temporary or a permanent character. In case he finds that the increase in demand is going to stay, he will make plans for expansion, put up orders for new plants, receive them and instal them. All this takes time. Similarly if the demand falls, he will not reduce his productive capacity immediately. He will take some time in tracing the factors which have led to this decrease in demand. If he finds that the decrease is due to factors which are not temporary, he will think of reducing the productive capacity. He may dispose of his plant as scrap or otherwise, or he may not replace the plant as it wears out. He adopts the course which involves least loss. But all this, again, takes time.

There is thus a period which elapses between a change in demand and adjustment of productive capacity to it. During this period productive capacity may be taken as given. This period is called the short period. During this period output can be varied within limits. The capacity of the existing plant sets the upper limit to the size of output. Within this limit, the actual output may be more or less. During the short period it is the productive capacity and not the output which is constant.

*Fixed and variable costs.* The costs of a firm during the short period may be divided into two categories. First, there are costs which are the same whatever the size of the output.<sup>1</sup> These are called fixed costs or supplementary costs. Sometimes they are also called overhead costs or invariable costs. Costs which change with the output are called prime costs or variable cost. Interest on investment, rent of the building, salaries of the staff on contract, and insurance premiums are examples of fixed costs. On the other hand, cost of raw material and fuel, wear of machinery in the productive process, cost of power, wages of current labour, are variable costs.

1. Of course the output cannot be more than the product of capacity of the plant to whom the period is short. On the other hand, even if output fails to meet these costs can have to be borne.

Fixed costs do not vary in the short period. In fact by definition short period is the period during which fixed costs are fixed. In the long period distinction between fixed and variable costs disappears because in the long period changes in productive capacity as well as in contracts can occur. All resources are variable. When no resources are fixed, no costs can be fixed.

*Length of the short period.* How long is the short period? It depends upon the nature of the industry under consideration. There may be industries in which fixed resources are very small because few machines are used and contracts with suppliers are for short duration. Here short period is very short. On the other hand, huge investment in machinery, etc., and long contracts with specialists may be essential for some industries. In their case the short period is sufficiently long.

### SHORT PERIOD COST CURVES

1. *Total Cost Curve.* Total cost of a firm in the short period for any given output is the sum of total fixed cost and total variable cost for that output. Obviously, total fixed cost is the same whatever the output, but total variable cost increases as the output increases. Total cost, therefore, rises with an increase in the output.

Can we say at what rate the total variable cost increases as the output increases? We know that with fixed plant (complex of some fixed resources) there will be some quantities of variable factors which shall prove rather too small for efficient use. As quantities of variable factors increase, efficiency increases and hence total variable cost rises less than proportionately. But this cannot go on. A point will be reached when diminishing returns begin to operate and total variable cost will begin to increase more than proportionately. In other words, as output increases, up to a point total variable cost increases at a diminishing rate and beyond that point it increases at an increasing rate. In mathematical parlance, up to a

point total variable cost curve will be concave and beyond that point it will be convex towards the  $x$ -axis (showing output).

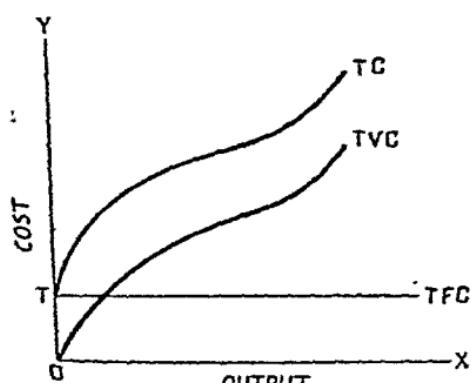


Fig. 14·1

TFC—Total Fixed Cost.

TVC—Total Variable Cost.

TC—Total Cost.

For every output, difference between total cost and total variable cost must be equal to total fixed cost. As total fixed cost is the same for every output, the total cost curve throughout its length will lie above the total variable cost curve and at every point the distance between the two curves will equal total fixed cost.

All the above features are clearly brought out in the above diagram.

2 *Average total cost curve* Average total cost for any given output is the sum of average fixed cost and average variable cost for that output. Since total fixed cost is the same for all outputs, average fixed cost falls as the output increases. It will, however, never be zero. Average fixed cost curve slopes downward to the right throughout its length but never intersects the  $x$  axis on which we show the size of the output.

Let us try to find out how average variable cost will vary as the output increases. If there are only two factors of production, one being fixed and the other variable, we know that average product of the variable factor will increase up to a point and then it will fall. In other words, average variable cost will fall up to a point and after that it will go on rising. This principle can be extend to more factors. There is, on the one hand, a complex of fixed factors, and on the other, a complex of variable factors. As more and more units of 'complex of variable factors' are applied, average variable cost falls to a minimum and then it rises upwards. The following table brings this out clearly.

TABLE 14-a

Size of the Output (units)	TFC (Rs.)	TVC (Rs.)	TC (Rs.)	AFC (Rs.)	AVC (Rs.)	ATC (Rs.)
1	200	50	250	200	50	250
2	200	80	280	100	40	140
3	200	100	300	66.6	33.3	100
4	200	110	310	50	27.5	77.5
5	200	115	315	40	23	63
6	200	125	325	33.3	21	54.3
7	200	140	340	28.5	20	48.5
8	200	184	384	25	23	48
9	200	270	470	22.2	30	52.2
10	200	350	550	20	35	55

TFC—Total fixed cost

TVC—Total variable cost.

TC—Total cost

AFC—Average fixed cost

AVC—Average variable cost

ATC—Average total cost

The conclusion here is that a typical average variable cost curve is U shaped. In the initial stages it slopes downward to the right till a point where AVC is the minimum. After this point the curve slopes upwards.

The average total cost curve is also U-shaped. This can easily be argued. As output increases, in the initial stages AFC and the AVC fall. So the ATC falls. A point comes when AVC begins

to rise. For some time ATC may still continue to fall as fall in AFC may outweigh the rise in AVC (In our table above, this happens as our producer increases his output from seven units to eight.) But it will be noted that as output goes on increasing, AFC falls at a diminishing rate while AVC rises at an increasing rate. Soon ATC begins to rise.

3. *Marginal Cost Curve.* When an additional unit is produced, only variable costs increase. Additional costs involved are, therefore, the additional variable costs. When we define marginal cost as a change in total cost when output is changed by one unit, it would make no difference if we just found out the change in variable costs only. Marginal cost for any output in the short period is thus independent of fixed costs.

For instance, in the table above marginal cost for an output of five units as read from the column TC is (326-315) eleven. Read from the column TVC also it is (126-115), eleven. Similar is the case with all levels of output which can easily be verified.

A typical short-run marginal cost curve is also U-shaped. While discussing above the relation between changes in output and changes in total variable cost, we have seen that to begin with total variable cost increases at a diminishing rate and after a point it increases at an increasing rate. We concluded from this that for some distance total variable cost curve is concave, which means that additional cost due to a unit is less than the same for the preceding unit, i.e., the marginal cost falls. When, on the one hand, the curve is convex, additional cost due to a unit is higher than the same for the preceding unit, or the marginal cost rises. All this means that marginal cost curve falls up to a point and then it slopes upwards.

4. *Interrelationships.* Interrelation of the various cost curves and also the relation between average cost curves on the one hand and marginal cost curve, on the other, can be explained with the help of the accompanying diagram.

*AFC* curve slopes downward to the right throughout its length. *AVC* curve, *ATC* curve, and *MC* curve, are all U-shaped.

*MC* curve is marginal both to *AVC* and *ATC* curves. Relation between *MC* curve on the one hand<sup>3</sup> and either of the two other curves, on the other, is the usual marginal-average relation. Let us take *MC* and *AVC*. Both are sloping downward up to the output *OM*. After that *MC*

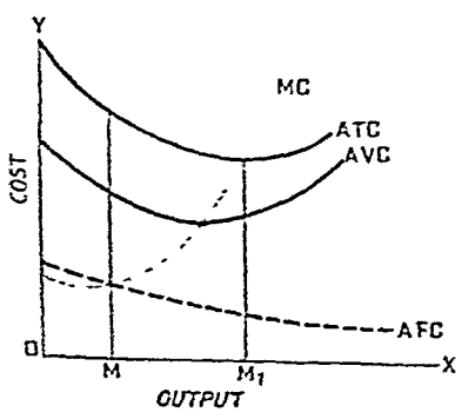


Fig. 14-2.

both are sloping downward up to the output *OM*. After that *MC*

begins to rise but  $AVC$  is still falling.  $MC$  intersects  $AVC$ , where the latter is at its minimum. Then both  $MC$  and  $AVC$  slope upwards. When  $AVC$  is falling,  $MC$  lies below  $AVC$ . When, however,  $AVC$  rises upwards,  $MC$  lies above it. Quite similar is the relation between  $MC$  and  $ATC$ .

If total fixed cost changes,  $AFC$  and  $ATC$  will change but  $AVC$  and  $MC$  will remain the same. In the new set up,  $ATC$  will take such a position that  $MC$  still intersects it at its lowest point.

In tracing the various short period curves we have assumed that as the firm increases its output and larger quantities of variable factors are used, prices of these factors do not change. This assumption holds good if there is perfect competition in the market for factors. Otherwise there are two possibilities. As a producer purchases larger quantities of factors, they have to be attracted from other producers by offering higher prices. In such a case the three curves ( $ATC$ ,  $AFC$ ,  $MC$ ) will first fall less steeply and then rise more steeply. The other possibility is that, as sellers purchase larger quantities of factors, they get them cheaper. In that case the three curves will first fall more steeply and then rise less steeply.  $AFC$  is, however, not affected by such changes.

When the output is  $OM$ , average total cost is at its minimum. With this output, efficiency of the plant is at its highest. This size of the output is called "optimum output" of the given scale of plant. The fact that with this output average total cost is at its lowest does not mean that this is the output of maximum profit. Profit depends not only on cost but also on price.  $OM$  is minimum cost output, but not necessarily the maximum profit output.

### LONG PERIOD COST CURVES

In the long period there is time enough to adjust productive capacity to demand, i.e., to instal new plants or to get rid of old plants through wear-out or otherwise. Distinction between fixed cost and variable cost disappears. The only two curves relevant to study are average (total) cost and marginal cost curves.

**1. Average cost curve.** In the short period, plant is of a fixed size and any output which is to be produced must be produced with this plant. In the long run, by assumption, even the plant can be changed. For every output the producer will have to make a choice from among different plants and he will choose that which produces that output at the lowest cost. Every plant is more suitable than others for a given range of output. If we draw average cost curves for different plants, that portion of each which represents such a range of its output (which it can produce cheaper than other plants) forms a part of the long-run average cost curve. Examine, for instance, the following diagram.

There are three plants—call them  $x, y, z$ .  $SAC_1, SAC_2$ , and  $SAC_3$  are respectively their average cost curves. It can be seen from the diagram that plant  $x$  is more suited than plant  $y$  for producing output  $OM_1$ . But plant  $z$  is more suited than  $x$  for  $OM_3$ . Plant  $z$  will produce  $OM_4$  cheaper than  $y$  while the latter will produce  $OM_2$  at a lower cost. The dotted portions of the three  $SAC$  curves are irrelevant during the long period because the producer will rather change the plant than operate on those portions.

Obviously, then, the thick portions of the three curves constitute the long-run average cost curve which may be called  $LAC$ .

We have drawn curves for only three scales of plant. The  $LAC$  consists of three scallops. It is wavy. In fact there are a large number of possible scales of plant—larger and smaller, of higher technological quality and lower, etc., etc. The larger the number of scales of plants accessible to the producer, less marked will be the waviness of the curve  $LAC$ . The curve will be absolutely smooth if the factors of production are infinitely divisible so that there is a separate plant (aggregate of factors) suitable for each output.

What will be the shape of a typical  $LAC$ ? We know that as the firm becomes larger, there are economies of scale resulting from indivisibility of factors, extension in specialisation, greater possibility of technological choice and so on. As a result of these economies, cost per unit of output diminishes as the size of the output increases. Economies, however, have their limits. And beyond a point diseconomies outweigh the economies. Cost per unit of output begins to rise. An  $LAC$ , therefore, slopes downwards in the initial stages but after a point slopes upwards. It is a U-shaped curve.

A smooth  $LAC$  has been called an “envelope” on the ground that it is to the short-run average cost curves what an envelope is to the letter that it covers. It may, however, be noted that unlike an envelope, an  $LAC$  is not separate from short-run average cost curves. It consists of the relevant portions of these curves. To quote Professor Chamberlin: “It is composed of plant curves; it is the plant curves.”<sup>1</sup> To avoid this misunderstanding it is better to call it a planning curve.

Adjustment in the scale of plant can be done in the long run but not in the short period. There may, thus, be economies which are available in the long run but which are not available in the short

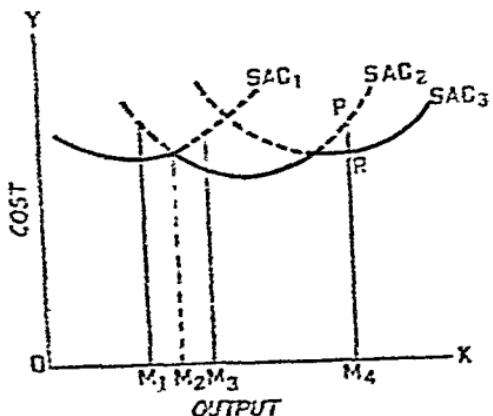


Fig. 14.3.

<sup>1</sup> *The Theory Of Monopolistic Competition*, p. 235.

run. On the other hand, all economies which are available in the short run are also available in the long run. Suppose, for instance, the producer has for some time been producing output  $OM_3$  (Fig. 14.3) with the plant  $y$ . Further suppose that now he has to produce  $OM_4$ . In the short period the only way open to him is to produce this amount with the plant  $y$  at an average cost of  $PM_4$ . In the long run he can replace it by plant  $z$  and produce  $OM_4$  at an average cost of  $RM_4$ , a course which cannot be adopted in the short period. The  $LAC$  may, therefore, lie below any given short period average cost curve for many outputs. Every point on  $LAC$  must coincide with a point on one of the short period curves. But no portion of the  $LAC$  can lie above any portion of any  $SAC$ . In other words,  $LAC$  can never intersect an  $SAC$ .

The  $LAC$  curve is the locus of the points of least possible costs per unit of various outputs during long period. Some writers have identified this curve with the locus of minima points of  $SAC$  curves. According to them  $LAC$  curve is tangential to all  $SAC$  curves at their minima points. This is incorrect.

It is possible for an  $LAC$  curve to be tangential to all  $SAC$  curves. This will happen when factors of production are perfectly divisible so that for every output there is a separate plant. There will then be a very large number of  $SAC$  curves. In such a case every plant will be more suitable than others for only one size of the output. In other words, on every  $SAC$  curve there will be only one point which will fall on  $LAC$  curve. Thus  $LAC$  curve will touch every  $SAC$  curve only on one point. This, however, does not mean that  $LAC$  curve will be tangential to  $SAC$  curves at the latter's minima points. In fact  $LAC$  curve will touch only one  $SAC$  curve at the latter's minima point. This  $SAC$  curve is the one whose minima point coincides with the minima point of  $LAC$  curve. In other cases the  $LAC$  curve will coincide with either a point on the falling portion or with a point on the rising portion of the curve. This is evident from Fig. 14.4.

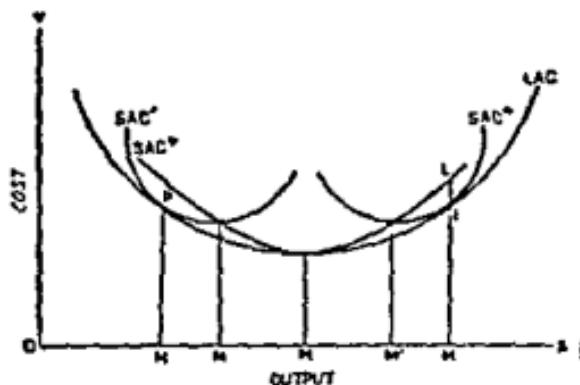


Fig. 14.4

Point  $P$  is the minima point of both  $LAC$  as well as  $SAC'$ . For outputs less than  $OM$ , the lowest long period costs occur on the falling portions of  $SAC$  curves. For outputs larger than  $OM$ , lowest long period costs occur on the rising portions of the  $SAC$  curves.

2. *Marginal Cost Curve.* Long-run marginal cost curve is basically similar to the short-run marginal cost curve. The only difference is that in the short run (small) change in total variable cost divided by (small) change in output gives the marginal cost. In the long run, the distinction between fixed cost and variable cost disappears. In the long run, therefore, marginal cost is the difference made to the total cost when a unit change is made in the output. The

Fig. 14.5.

long-run marginal cost has the usual relationship to the long-run average cost. The long-run average cost curve, we have seen, is a U-shaped curve. The long-run marginal cost curve is also a U-shaped curve. *LMC* lies below *LAC* when the latter is falling. And it lies above *LAC* when the latter slopes upwards. Of course *LMC* intersects *LAC* at the lowest point of the latter. This is all shown in Fig. 14.5 above.

## CHAPTER XV

### PARTIAL EQUILIBRIUM UNDER PERFECT COMPETITION

#### MEANING OF EQUILIBRIUM

**Definition** Equilibrium is a state in which the net result of forces in operation is nil. In this state the situation continues to be where it is unless it is disturbed by the appearance of a new factor or the disappearance of an old factor. Economic equilibrium is a state of active equilibrium, not an inert state. It is not a state in which all forces have ceased to operate on the other hand, it is the state in which operative forces hold one another in balance.

Equilibrium has sometimes been defined as the state in the market in which amount demanded equals amount offered for sale. This definition cannot be accepted for two reasons. First, it is not necessary that in a state of equilibrium in the market, amount demanded equals amount offered for sale. Of course amount purchased always equals amount actually sold. But the seller or sellers may be prepared to sell more at the prevailing price. If they sell the amount which they are selling and no more, it is because the buyers would not purchase more *at the same price*.<sup>1</sup> They can sell larger amounts only if they lower the price. They content themselves with the sale which they make because they are getting maximum profits *under the circumstances*. If they could sell more at the same price, they would gladly do it.<sup>1</sup>

The second shortcoming of this definition is that it restricts the application of the term to situations in the market only. In fact the term equilibrium is of a wider application and can be usefully employed to describe situations in many other spheres. For

<sup>1</sup> As we shall presently see, a monopolist produces and sells such an amount at which  $MC=MR$ . If  $MC$  and  $MR$  curves are as shown in Fig. 15.1 he will produce  $OM_1$ . If after the point  $Q$ ,  $AR$  were to run parallel to  $x$ -axis,  $MR$  would, in this part coincide with it. Then he would produce  $OM_2$  and not  $OM_1$ . Under the given circumstances he produces  $OM_1$  and not  $OM_2$  because he cannot sell more at the price  $QM_1$ . Thus at the price  $QM_1$  he would like to sell  $OM_2$ , though he is forced to sell  $OM_1$  only because he cannot sell more without reducing the price.

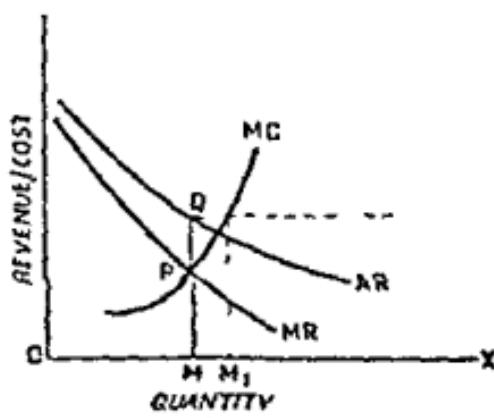


Fig. 15.1

instance, the study of the principle of substitution is an attempt to find out positions of equilibrium. A consumer's expenditure is in a state of equilibrium when he is not inclined to shift any part of his expenditure from any one item to any other item. A producer achieves equilibrium distribution of his resources when marginal outlay on every factor of production yields the same amount of output. Similarly we could find out equilibrium working hours of a labourer. A worker's efforts are, on the one hand, a source of income and, on the other, a source of discomfort. He is inclined to work longer hours so long as utility of marginal earning exceeds disutility of marginal effort. Equilibrium is achieved when marginal utility of earning equals marginal disutility of work. At this stage the worker is not inclined to work and earn more nor less.

*General and partial equilibrium.* We are highly interested in the study of conditions of equilibrium of a firm and of an industry. A firm is in equilibrium when the producer would stick to the size of the output he is producing and would neither increase nor reduce it. Similarly an industry is in equilibrium when there is no net tendency for its output to change.

The study of equilibrium of an industry is the study of "particular equilibrium" or "partial equilibrium" as distinct from the study of "general equilibrium" which refers to the equilibrium of the economic system as a whole. The latter presents many difficulties, most important of which is the fact that there is no agreement among the economists regarding the exact connotation of this term. Professor Wicksell, for instance, would say that in a state of general equilibrium commodities are produced at constant costs and profits fall to zero. There are others who think of it as a state in which past experience can serve as a perfect guide for the future and hence forecasts are correct and ready to make. Still others hold that it means that total employment and aggregate output are in equilibrium although individual industries might expand or contract. Lastly, there are writers who think of general equilibrium as a state of comprehensive equilibrium—every worker is earning equilibrium income; every consumer has achieved equilibrium of expenditure of his income; every firm and industry is in equilibrium; saving and investment, price of commodities, and rates of rewards for factors of production, have all settled at their equilibrium levels. This last definition of the concept is most appealing.

"It is a study of such an equilibrium will yield no other conclusion than that everything depends on everything else and that in consequence of such a situation there will be as many equations as unknowns."

equilibrium price of an industry are thus interdependent. In position of equilibrium neither the output nor the price has any tendency to change.

Changes in the size of the output of one industry produce changes in the quantities of factors available for other industries and hence their supply and cost conditions change. Similarly, when output in one industry increases, demand for substitutes of its product falls and the demand for its complements increases. Thus conditions of demand and production in any industry are dependent on the conditions of demand and production in many other industries. Not only that. Even the positions of the cost curve and demand curve of an industry are not independent of each other. When producers spend more on advertisement, cost curve of the industry shifts upwards. But, as a result of these costs, demand is also likely to increase and the demand curve shifts to an upper position. Similarly suppose the demand increases. If the increase results from a shift of demand from those industries which are using the same or similar factors of production, some factors would be released and the prices of the factors are not likely to rise. On the other hand, if the shift is from industries which use different kinds of factors, cost curve of the industry would shift upwards because the prices of the factors used in this industry are likely to rise. Thus the demand and supply curves of an industry are interdependent and are also dependent on the demand and supply conditions in other industries.

For the study of "particular equilibrium" the industry in question must be isolated from other industries. It is assumed that conditions of production and demand in respect of the industry are independent of conditions of demand and supply in respect of other industries. In other words, both demand and supply curves of the industry under study are independent of such curves relating to other industries. It is also assumed that conditions of its own demand and supply are independent of each other. That is, demand curve of the industry is assumed to be independent of the position of supply curve and vice versa.

#### GUIDING MOTIVE FOR THE ENTREPRENEUR

*Unreal assumption* Pure theory has the liberty of building itself on any set of assumptions, howsoever removed those assumptions may be from conditions which obtain in the real world. We could, for instance, build a theory of production on the assumption that every producer endeavours to adjust his output to that point at which his profit equals the square of the distance of his home-town from Calcutta. Such a theory would, apart from the abstract pleasure of killing time, be of little use to any one.

*The Profit motive* Even of the considerations which are actually likely to weigh with producers, it is not possible for us to take cognizance of all of them. The motive which is the most common is the profit motive. No doubt *certain* persons run on a no-profit-no-loss basis. Philanthropists

or services free or cheap to the poor people. Also, there are people who content themselves with less profit so as to have more leisure. A vast majority of the producers are, however, guided by the motive of earning maximum profit. We, therefore, assume that the guiding motive for every entrepreneur is to maximise his profit. In making such an assumption we are in fact taking into account the greatest common measure from among the motives which are actually likely to guide producers in deciding upon the sizes of their respective outputs. And, also, profit is something which easily lends itself to measurement. Our basic principle then comes to be that every entrepreneur will endeavour to produce such an amount of the product that the difference between his total revenue and the total cost is maximum.

In certain cases it is found that a producer can increase his profits by raising the price but he actually does not do so for various reasons. He may not raise the price because he fears that competitors might be attracted into the field by his high earnings. May be, that he thinks that if he raises the price, consumers' resistance might develop and many of them might gradually take to substitutes. Necessity is the mother of invention and when a producer is charging high prices, new products might be invented which serve as articles of use alternative to his product. Apart from all these, there is always the possibility that government takes over his works in the interest of the consumers. In all such cases the producer is at any time, undoubtedly earning profits lower than what he could at that time. This is, however, a case where the producer is *at any time* earning lower profits than the maximum, but he is doing so in his long-run interest. He stops below the level of maximum profits at any time so as to earn maximum profits in the long run.

It must be clearly understood that maximum profit is not necessarily sufficient profit. In other words, maximum profit may be higher or lower than, or even equal to, his normal profit—profit, which is just enough to retain the producer in trade. For example, suppose that Rs. 4,000 per year is a level of profit which will just induce a producer to stay on in an industry. Now, given the demand conditions of the market, he may increase his profit by changing his methods of production, by eliminating wastes, and by varying the size of his output. But when he has attended to all these factors and has taken all possible measures, his profit might stand at a level of Rs. 3,000/- per year. Any change in the methods or size of the output will reduce his profit. Rs. 3,000 per annum is then the maximum profit which he can earn under the circumstances. But this maximum profit is below what he considers normal profit. He will quit the industry.

The fact of the matter is that a producer, in spite of his best efforts, might not be able to make any profit at all. He might be actually making a loss. The condition of maximum profit implies, also the condition that if he is to suffer a loss, he will endeavour to reduce his loss to the minimum.

will choose the most appropriate output and yet all this may help him only to reduce his loss, since, for him, there may not be any chance to make any profit under the circumstances.

Thus, so long as a firm stays in the industry, it will endeavour to produce such an output as yields maximum profit. When such an amount is being produced, it will have no tendency to increase it or reduce it. It will be in a state of equilibrium. Hence equilibrium output of a firm is that which enables it to earn maximum profit, under the circumstances.

It may be noted that the motive of maximum profit is not in any manner dependent upon the structure of the market. Whether the producer is a monopolist, or he is selling in a perfectly competitive or an imperfectly competitive market, his endeavour is to pitch his profit to the highest level or bring down his losses to the minimum.

### EQUILIBRIUM OF A FIRM

*Equality of MC and MR* We have shown that a firm is in equilibrium, that is, the producer will not be inclined to change the size of his output, when the profit is maximum. The condition of maximum profit is fulfilled when the output is such that marginal cost of firm equals marginal revenue. This can easily be shown with the help of the accompanying diagram. Marginal cost equals marginal revenue when the output is  $OM$ . If the entrepreneur produces this amount, he earns a profit represented by the area  $PQR$ . Any output which is smaller or larger than this yields profit which is less than  $PQR$ . For instance, if he reduces his output to, say,  $OM_1$ , his profit shrinks to  $P_1P_1'QR$  which is obviously less than  $PQR$ . Similarly, if he increases his output to  $OM_2$ , his profit is smaller than  $PQR$  by the area  $P_2P_2'P$ . If he stops short of the amount  $OM$ , he foregoes some profit which he can earn by producing a little more. Beyond the point  $P$  the

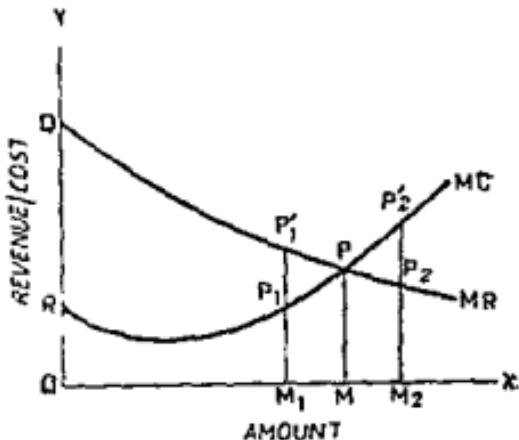


Fig 15.2

2 When the output is  $OM$ ,

$$\begin{aligned} \text{Total revenue} &= OMPQ \\ \text{Total cost} &= OMPR \\ \text{Profit} &= OMPQ - OMPR = PQR \end{aligned}$$

With the output  $OM_1$ ,

$$\begin{aligned} \text{Total revenue} &= OM_1P_1'Q \\ \text{Total cost} &= OM_1P_1'R \\ \text{Profit} &= OM_1'P_1'Q - O_1MP_1R \\ &= P_1P_1'QR \\ &= PQR - P_1P_2'P \end{aligned}$$

(continued on next page)

marginal cost curve lies above the marginal revenue curve. Any quantity additional to  $OM$  earns a negative profit because the cost of this additional amount is higher than the revenue yielded by it.

The principle that a firm is in equilibrium when its marginal cost equals marginal revenue holds good both for the short period as well as the long period. Whether the period be short or long, the producer must endeavour to maximise his profit or minimise his loss. And thus he can do by adjusting his output to the level where marginal cost and marginal revenue are equal. Of course one important difference remains. We have already seen that cost curves relevant to the short period are different from cost curves relevant to the long run. In the short period it is the marginal cost curve of the plant which is relevant. In the long run the restriction of fixity of plant disappears and marginal cost curve for such a period is the curve which is marginal to the planning curve.

We have already seen that, under conditions of perfect competition, marginal revenue curve of a firm coincides with its average revenue curve. That is, in such conditions, for every amount marginal revenue equals price. When the firm is, therefore, in equilibrium, its marginal cost equals both its marginal revenue as well as price.

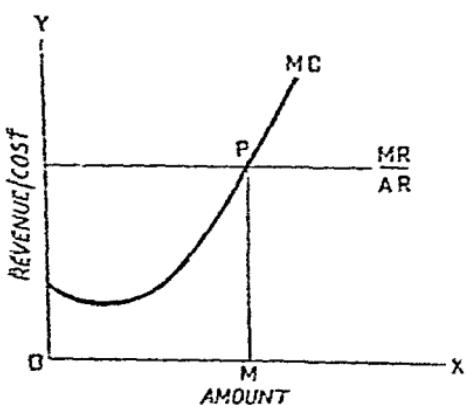


Fig. 15.3.

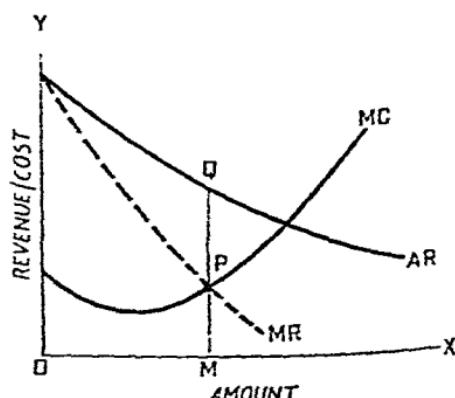


Fig. 15.4.

In imperfect competition (or monopoly) marginal revenue curve lies below average revenue curve. Hence in equilibrium of a firm in

And when the output is  $OM_2$ .

$$\begin{aligned} \text{Total revenue} &= OM_2 P_2 Q \\ \text{Total cost} &= OM_2 P_2' R \\ \text{Profit} &= OM_2 P_2 Q - OM_2 P_2' R \\ &= PQR - PP_2 P_2' \end{aligned}$$

such a case marginal cost equals marginal revenue but stands below price Fig 15.3 represents equilibrium position of a firm in perfect competition  $OM$  is the equilibrium amount Marginal cost, marginal revenue, and price, all are equal to  $PM$  Fig 15.4 represents the position in the case of imperfect competition (or monopoly) Here again equilibrium amount is  $OM'$  Marginal cost and marginal revenue, both stand at the level  $PM$ , but the price is  $Q'M'$  which is higher than marginal cost

*Intersection by marginal cost curve from below* The amount which equals marginal cost and marginal revenue is an equilibrium amount only when another condition is fulfilled It is that beyond this amount marginal cost curve lies above the marginal revenue curve If beyond this amount marginal cost curve lies below the marginal revenue curve the position is not one of equilibrium though it appears to be one Such a situation, for example, appears in perfect competition when the firm in question is enjoying the benefit of

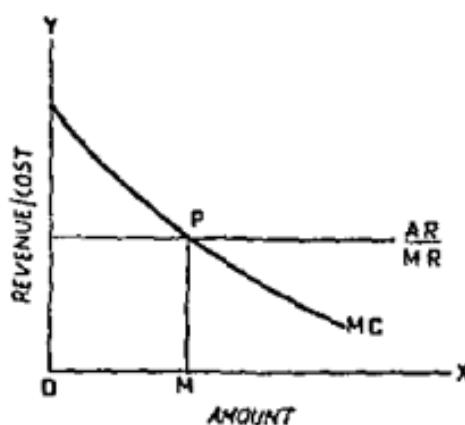


Fig 15.5

diminishing costs as a result of internal economies In Fig 15.5 marginal cost curve is sloping downwards because of internal economies With the output  $OM$ , marginal cost equals marginal revenue, but rather than being an output yielding maximum profit, it represents a position of maximum loss Loss can be reduced and converted into profit by increasing the output But the whole position is untenable The firm in question will go on expanding its output because every additional quantity brings in additional profit One of the two things must happen The economies may exhaust themselves and the diseconomies overtake them so that the marginal cost curve ultimately begins to slope upwards It will then intersect the marginal revenue curve again This other point of intersection then represents the position of equilibrium The other possibility is that the firm goes on expanding till a position is reached where it comes to produce a substantial proportion of the total output of the industry Any variation in its output, then, will influence the price in the market Marginal revenue curve will then slope downwards and competition will no more be perfect Perfect competition and internal economies are thus incompatible Either the economies must soon exhaust themselves so that the marginal cost curve slopes upwards, or, competition ceases to be perfect and the marginal revenue curve slopes downwards rather than running parallel to the x axis

Internal economies are, however, compatible with imperfect competition or monopoly. Here marginal revenue curve slopes downwards. Marginal cost curve may also, in the relevant portion, slope downward as shown in Fig. 15.6.  $OM$  is the equilibrium amount, because to the left of  $P$ , marginal revenue curve lies above the marginal cost curve, so that  $PQR$  represents profit. To the right of  $P$ , marginal cost curve lies above the marginal revenue curve, so that any extension in the output beyond  $OM$  will reduce profit.

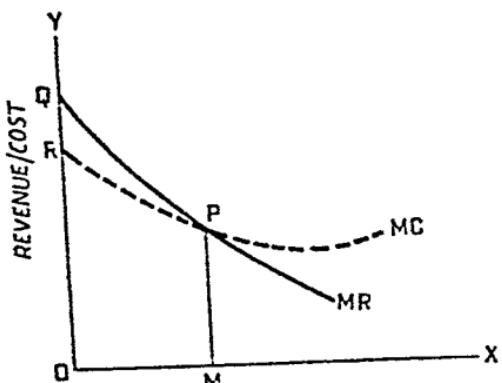


Fig. 15.6.

### EQUILIBRIUM OF AN INDUSTRY

*Sources of variation in output.* An industry is in equilibrium when it is producing an equilibrium output, that is, when there is no tendency for its output to increase or decrease. There are two sources of variations in the size of the output of an industry, viz., a change in the outputs of existing firms, and, secondly, a change in the number of firms. Of course a combination of both these will also change the size of its output.

*Conditions of equilibrium.* Obviously, then, there are two conditions for the equilibrium of an industry. First, no existing firm is inclined to vary its output. This quite evidently implies that every firm in the industry is in equilibrium. In other words, one condition for the equilibrium of an industry is that every firm is producing such an amount as equalises its marginal cost to its marginal revenue.

The second condition is that there is neither any inducement for new firms to enter the industry, nor is there any reason for the existing firms to leave the industry. If every firm in the industry is earning profits above normal, there will be reason for new firms to believe that they would be able to earn normal profits if they enter the field. There will be a tendency for the number of firms to increase. On the other hand, if profits earned by some of the firms in the industry are below normal, they will be forced to quit the field. The number of firms will thus tend to diminish.

Full equilibrium—equilibrium for every firm as well as for the industry as a whole—will have been attained when for every firm cost equals marginal revenue and when neither is there any firm which is earning profits below normal nor are all the firms earning

profits above normal.<sup>3</sup> We will now study the implication of these conditions in different circumstances.

### SHORT RUN COMPETITIVE EQUILIBRIUM

*Identical cost curves* We first take up a perfectly competitive market. The period under study is short-run. We may start here with a situation in which all firms have identical cost curves. This means that all factors of production, including entrepreneurship, have perfectly elastic supply, so that any number of identical units of them are available at existing prices. In Fig 15.7,  $AC$  and  $MC$  are respectively the average and marginal cost curves of every firm in the industry. Suppose the price is  $OP$ .  $PQ$  will be the average as well as marginal revenue curve. Every firm will be producing an output  $OM$ , because this quantity equalises marginal cost and marginal revenue. Incidentally, it also equalises average cost and average revenue, so that every firm will be earning normal profit.

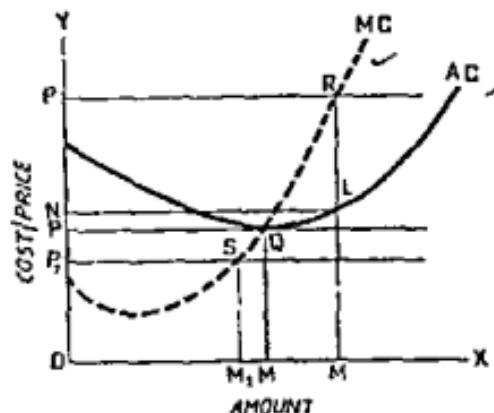


Fig 15.7

Now suppose that the price is  $OP_1$ .  $P_1R$  is then the average-marginal revenue curve. Every firm will be producing an output  $OM_1$ . Marginal cost and marginal revenue will be equal. But every firm will be earning a profit higher than normal profit by  $P_1RLN$ . Will then the industry expand? The period under consideration being short-run, expansion is not possible. For, by definition, short period is the period which does not permit of any adjustment of scale of plants nor instalment of new plants.

Similarly, if price is  $OP_2$ ,  $P_2S$  will be the average-marginal revenue curve. Firms will be earning profits below normal. May be even that they are all making losses. Yet the existing plants cannot be scrapped. Does it then mean that in the short run producers will continue production, however low the price might fall? The answer is, no?

3. The reader must note that we have taken a great care in stating the second condition. Mrs. Robinson gives the double condition of  $MC=MR$  and  $AC=AR$ . We shall presently see that the second condition of  $AC=AR$  holds good when all firms have identical cost curves. If different firms have different cost curves, those with lower cost will be earning super-normal profits even in position of full equilibrium. It is only the marginal firms which will be earning just the normal profits. Of course if we include rent in cost, the condition  $AC=AR$  will hold good in the case of every firm. However we postpone the discussion of this method of approach to the chapter on rent.

To see the whole thing clearly, we have to introduce into the picture our average variable cost curve. In the short period fixed costs have to be borne, whether there is any production or not. Variable costs can, however, be avoided by stopping production. Producers will, therefore, employ variable factors if only their employment at least pays its own way. Hence in the short run, price might very well stand below average total cost. So long as it stands above average variable cost, every producer will continue producing such an amount at which marginal cost

equals marginal revenue. But if the price falls below average variable cost, production will be stopped. In Fig. 15.8,  $OT$  marks the level below which price cannot fall.

**Conclusion.** Two conclusions follow from above. First, in the short run the price can be any high, so that the entrepreneurs may earn bumper profits. But the price cannot fall below the minimum average variable cost. The producers might earn very high supernormal profits. They might even incur losses, but their losses cannot exceed total fixed cost. The second conclusion is that short run is the period in which full equilibrium is rather a rare phenomenon. Of course, one condition of such an equilibrium, that for every firm marginal cost equals marginal revenue, is fulfilled. But the second condition is rarely fulfilled. All firms may be earning profits above normal or below normal and yet the forces at work would not have time enough to bring about an adjustment in the number of firms.

**Different cost curves.** Let us now come to the other possible situation; namely, that various producers have different cost curves. Let us suppose that this is so on account of differences in the talents of different entrepreneurs. It would be instructive to divide the firms into four categories—*A*, *B*, *C*, and *D*—whose positions are shown in the following curves:

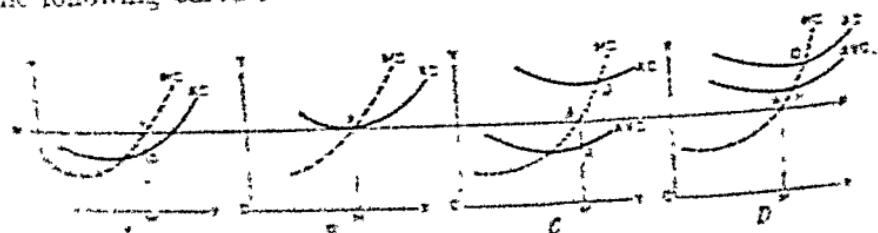


Fig. 15.9

In the above diagrams,  $AC$  is the average cost curve, and  $MC$  the marginal cost curve.  $AVC$  is the average variable cost curve.  $PP$  shows the price and, hence, represents both average as well as marginal revenue curve.

Firms of category *A* will be earning supernormal profits.  $MC$  intersects  $PP$  at  $p$ . Hence  $OM$  is the output and  $QM$  the average cost.  $pQ$  measures supernormal profit per unit of output.

In the case of a firm of category *B*, equilibrium output is such as equals not only marginal cost, but also average cost, with price. In this case profit will be just normal.

For a firm of category *C*, marginal cost equals marginal revenue when output is  $OM$ . But with this output average cost is  $QM$  while average revenue is  $pM$ . Profits are thus below normal, or, may be, that there is a loss. But price is higher than  $RM$ , the average variable cost. Hence the firm will continue to produce.

For firms in category *D* marginal cost equals marginal revenue when output is  $OM$ . But with this output price is lower than not only average total cost but even average variable cost. Hence firms in this category will stop production.

*Conclusion* The general nature of conclusions even in this situation is no different. Firms may earn supernormal, normal, or sub-normal profits, or may even suffer losses. Those firms will not produce in whose case price is below minimum average variable cost. Firms which continue to produce will equate their marginal cost to marginal revenue. Conditions of full equilibrium are unlikely to be reached because the period is short and instalment of new plants or scrapping of old plants is ruled out.

#### LONG RUN COMPETITIVE EQUILIBRIUM

We continue to consider a perfectly competitive market but the period under consideration is long-run. All adjustments of size are possible. Producers in the industry can vary their outputs not only by technological changes in the utilization of existing plants but also by adding new plants or replacing or scrapping the existing plants. New producers can enter the field and old ones may quit it. Planning curve of every firm will be its relevant average cost curve and the curve marginal to it is the relevant marginal cost curve.

*Identical cost curves* Here also it would be convenient first to consider a situation where all firms have identical cost curves. In position of equilibrium, every firm will be producing an output which can give him maximum profit and this maximum will be equal to normal profit. In other words, average cost (including normal profit) will be equal to average revenue or price. If the price is such that profit is above (or below) normal, number of firms in the industry will tend to increase (or decrease). Thus, in this case, our double condition of equilibrium comes to be

$$\begin{aligned} \text{Marginal cost} &= \text{Marginal revenue} \\ \text{and Average cost} &= \text{Average revenue} \end{aligned}$$

For fulfilment of this double condition, it is essential that the average revenue curve is tangential to the average cost curve at the latter's minima point. For, it cannot be otherwise. If the

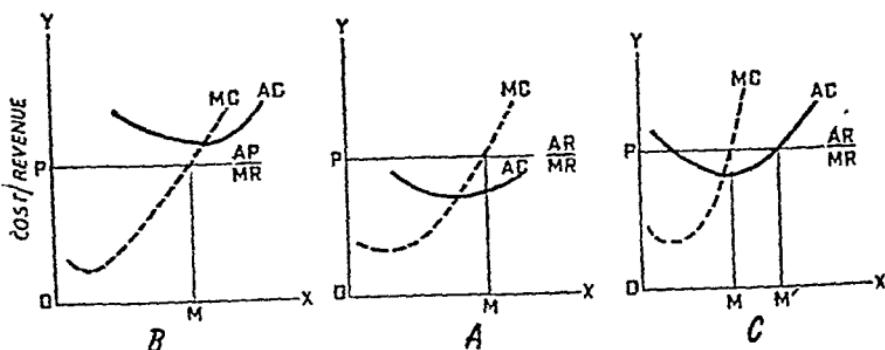


Fig. 15.10

average revenue curve lies throughout its length below the average cost curve, as in Fig. A above, every size of the output will yield profits less than normal. When the output is  $OM$ , average cost and marginal revenue are equal but price is less than average cost which means profit is below normal. On the other hand, if the average revenue curve lies throughout its length above the average cost curve, as shown in Fig. B, profits will for every output be above normal. Every existing firm will be in equilibrium with an output  $OM$  but the industry will not be in equilibrium because there will be a tendency for new firms to enter the field. Even if the average cost curve is placed as shown in Fig. C, there can be no full equilibrium. Equilibrium output for every firm will be  $OM$  which will yield sub-normal profit and hence some firms will have to quit the industry.

As we are assuming conditions of perfect competition, for every firm marginal revenue and average revenue are equal for all outputs. Our conditions of equilibrium being that the former is equal to marginal cost and the latter to average cost, these two conditions become what has been called a double equation; viz.

$$\text{Marginal cost} = \text{Average cost} = \text{Marginal revenue} = \text{Average revenue.}$$

*Position of equilibrium.* We know that marginal-cum-average revenue curve for every firm runs parallel to the  $x$ -axis. We also know now that the average revenue curve must touch the average cost curve at its minima point. Lastly, we know that the marginal cost curve intersects the average cost curve at the latter's lowest point. Hence in equilibrium the position of every firm will be as shown in Fig. 15.11.  $OM$  is the equilibrium output of every firm, because it is this output which will satisfy the double equation. Thus we come to the conclusion that in condition of perfect competition if all firms have identical cost curves, equilibrium will be established in a position where in the case of every firm marginal cost as well as average cost equals price. Every firm will then be of the optimum size producing its output at the least average cost.

*Different cost curves.* Now let us consider the situation in which different firms have different cost curves. What form would our conditions of full equilibrium assume here? In this case the concept of marginal firm is relevant. Let us first attempt to define this term.

*Concept of marginal firm.*  
A marginal firm is one which will be the first to leave the industry if price falls. It may of course be the least efficient firm having the highest costs, leaving the industry when the price falls

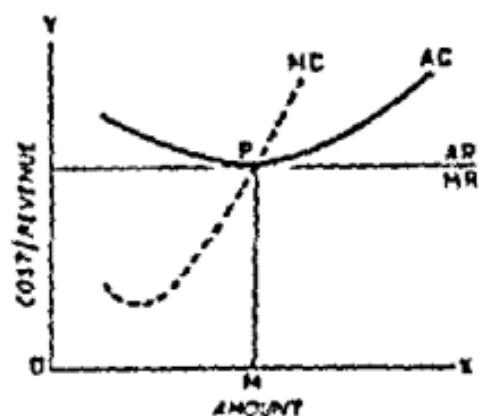


Fig. 15-11

because its profit sinks to below normal. But it may also be the most efficient firm and yet is the first to leave the industry when price falls because the entrepreneur can earn higher profit in an other industry. Such entrepreneurs have high opportunity costs, i.e., their expected level of earnings in the next alternative industry. If we were to include this opportunity cost as the "cost of entrepreneurship" among the implicit costs, then it would be correct to define a marginal firm as the highest cost firm within the industry.

*Costs as of input.* At some firms have, for any given output, lower costs than others, profits of some will be higher than of others. It is evident therefore that if the marginal firm is earning normal profit, the firms with less costs, known as intra-marginal firms, will be earning super-normal profits.

In pure competition, price will be equal to marginal as well as average cost of the marginal firm. It must be equal to the marginal cost because otherwise there will be a tendency for the firm to alter the size of their plant. And also the price cannot be higher nor lower than its average cost. I.e., if the price is higher than its average cost, it will be easy to profit above normal and there will be a tendency for firms to enter. If the costs are more than the price, it will be difficult to profit above normal and the number of firms will tend to decrease.

At an equilibrium of supply, there is room left to the firms to be earned by the present price, i.e., normal profit. And so the cost of every firm must be  $\geq 10\%$ . The price of equilibrium must be  $\geq 10\%$ .

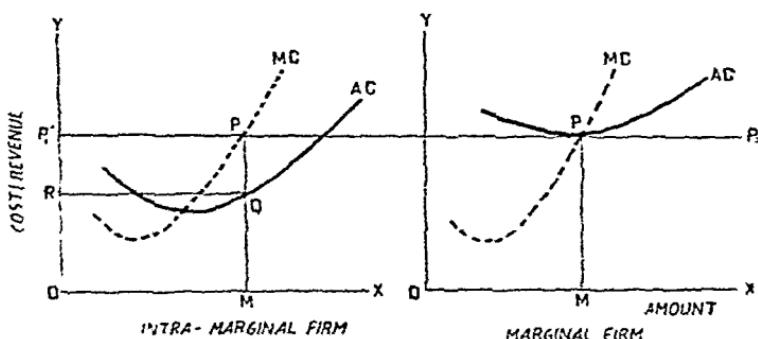


Fig. 15.12

$PM$  is the price and  $OM$  equilibrium amount in both cases. Both the firms produce such an output that price equals marginal cost. In the case of the marginal firm, it also equals average cost. In the case of intra-marginal firm, price  $PM$  is higher than the average cost  $QM$ . The area  $PQRP_1'$  represents the excess of profit over normal. This supernormal profit is not necessary to keep the intra-marginal firm in the industry. If price falls, this firm will continue to produce till it becomes the marginal firm. Then supernormal profit will have disappeared. Supernormal profit is thus a veritable surplus. As we shall see in a subsequent chapter, this surplus has the nature of rent.

## CHAPTER XVI

# MONOPOLY

### INTRODUCTORY

*Assumptions.* In monopoly, there is only one producer, therefore the terms firm and industry are synonymous. Equilibrium of the industry means only equilibrium of the firm. As we have already pointed out, the principle, that a firm is in equilibrium when it is earning maximum profit, is as much applicable to the case of monopoly as to any other case.<sup>1</sup> We have also pointed out that the monopolist may be in a position to increase his profit by raising the price, but he may not do so for fear of new competitors, new inventors, consumer's resistance, and government interference. In our discussion of the price-output policy of the monopolist, we shall rule out these possibilities and proceed on the basis that he aims to maximize profit.

to change its productive capacity. In the long run, productive capacity is adjustable and, hence, the only condition for equilibrium will be maximum profit, which means that marginal cost must be equal to marginal revenue.

The question of short-period equilibrium under monopoly is more or less similar in nature to the same under perfect competition. The conclusions are no different. In such a period the monopolist cannot alter the size of his plant. If the demand for his product and, hence, price stands high, he may extend the size of his output, but he cannot increase it beyond the maximum capacity of his plant. He will be earning bumper profit. Similarly, if demand stands low, his profit may fall very low. May be, that he has even to suffer losses.

He will, however, stop production if the price falls below his minimum average variable cost. He will not let his losses exceed his total fixed cost. Full equilibrium in the sense of the monopolist not having any desire to extend or reduce the scale of his plant would be a rare phenomenon in the short period.

### LONG-RUN PRICE-OUTPUT POLICY OF A MONOPOLIST

*Revenue curves.* When the number of buyers is large and the monopolist does not differentiate between one buyer and another buyer, conditions of demand are similar to the conditions under perfect competition. Market demand curve is the sum of the demand curves of individual buyers. But, the demand curve, as it faces the monopolist, is different from the one which faces a producer in perfect competition. If the monopolist changes the size of his output, it will have a cognisable influence on the price. A larger sale can be done only at a lower price. In other words, the average revenue curve of the monopolist slopes downwards to the right. And so does the marginal revenue curve which does not coincide with the average revenue curve but lies below it.

*Choice between amount and price.* Demand curve or the average revenue curve is the data which the monopolist has to take as given. It is not in his power to change it.<sup>2</sup> There is one amount which will be demanded at a given price. If he chooses to fix the price, he must rest content with the amount which can be sold at that price. Or, if he chooses the amount, he must accept the price which goes with it. For instance, consider the following table:—

TABLE 16-a

Price of Average Revenue (Rs.)	Amount Demanded (units)
2	300
3	275

<sup>2</sup> In fact he may change it by advertisement and incurring other selling costs will be discussed in the next chapter.

Now, either he must accept Rs. 2 as price and sell 300 units, or he may fix the price at Rs. 3 and be content with a sale of 275 units. Thus, he can decide upon either the amount or the price of his own choice. He can not fix both to his desire. Will he, then, fix a very high price?

*Figu're of marginal cost and marginal revenue.* The aim of the monopolist is to maximise his profit. If he fixes a very high price, there may be a large profit margin on every unit but total profit is not a function of profit margin only. It is also a function of the turnover. If he fixes a high price, profit-margin may be large but turnover will be small. Similarly if he decides to produce a large amount price will be low. If the turnover will be large, but profit margin will be small. It is therefore, not necessary that he fixes a

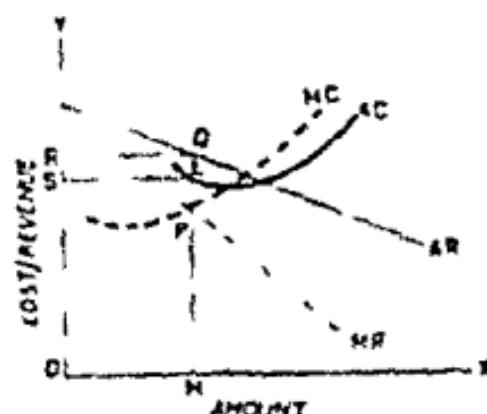


Fig. 16.1

price. Condition of marginal cost being equal to marginal revenue is fulfilled, since both are zero.

2. Next let us suppose that the owner of the spring has to get it cleaned every week. He will then have to bear a fixed cost which is independent of the size of the output, i.e., of the number of bottles of water sold. Here even if one unit is produced, cost to be borne is the same. In other words, beyond one unit marginal cost is zero, whatever the amount produced. Let us suppose that the fixed cost incurred is  $x$ . then—

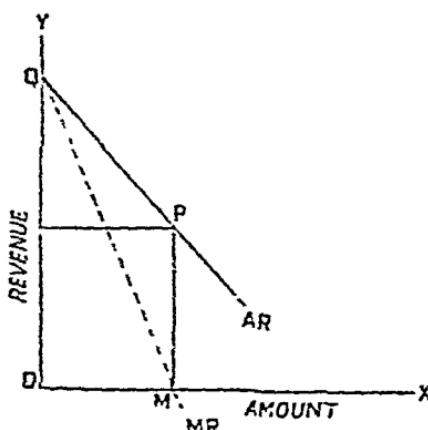


Fig. 16-2.

when marginal revenue equals zero. output, marginal cost and marginal revenue will both equal zero.

Profit = Total revenue -  $x$ .  
 $x$  being a fixed quantity, profit will be maximum when total revenue is maximum, i.e., Once again at the equilibrium

3. Now suppose that the producer is somehow obliged to produce a fixed output though he is free to sell the whole or a part of it. Once again he will sell as much of it as gives him maximum revenue, for his cost is once again a fixed factor.

Let  $MR$  and  $AR$  be the marginal and average revenue curves. If the amount is more than  $OM$  he will sell only  $OM$  and destroy the rest or use the balance himself, because with sale  $OM$ , his total revenue is maximum. But if the amount is less than  $OM$ , he will sell the whole amount. For instance, suppose the output is  $OM_1$ . If he sells less than this, his total revenue, and hence profit, will decrease. So he must sell the whole of it. In this case, marginal revenue and marginal cost cannot be equalised because the monopolist is not free to decide the size of his output.

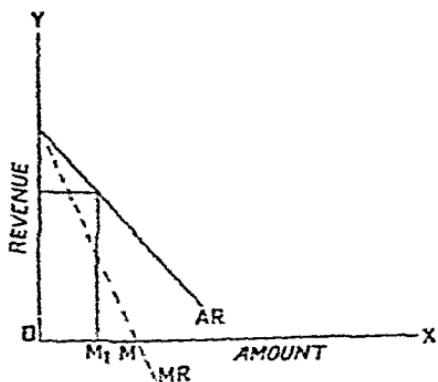


Fig. 16-3.

4. Now let us take the usual case where cost and output are variable. This is the typical case which we have depicted in Fig. 16.1 In equilibrium marginal cost and marginal revenue will both be

## MONOPOLY

equal and positive and the monopolist's profit will be the highest. Two points may, however, be noted here.

**Possibility of zero profit** The monopoly gain will usually be positive. It cannot be negative, otherwise he will quit the industry. But it is conceivable that this gain is zero. That is, there is a possibility that the monopolist does not earn any supernormal profit but only normal profit. In that case in position of equilibrium not only will marginal cost equal marginal revenue, but average cost will also equal average revenue and the average revenue curve will be tangential to the average cost curve as shown in Fig 16.4. With output OM, both marginal cost and marginal revenue equal  $PM$  and both average cost and average revenue equal  $QV$ . Equilibrium is established but there is no monopoly gain.

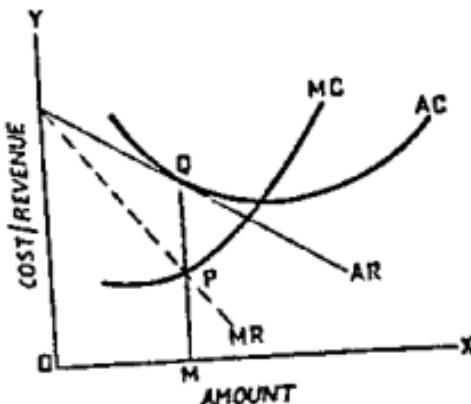


Fig 16.4

**Elasticity of demand at the point of equilibrium** Secondly, it must be noted that at the point of equilibrium elasticity of demand for the monopolist's product (elasticity of his average revenue curve) must be more than unity. This can be made clear with the help of diagram 16.5.

AR is a (straight line) average revenue curve and MR the corresponding marginal revenue curve. P is the middle point of AB, the portion of AR intercepted between the two axes. M is the point where MR intersects the x axis. PM will then be perpendicular upon x axis. Elasticity of demand over the length AP is more than unity while that over PB is less than unity.

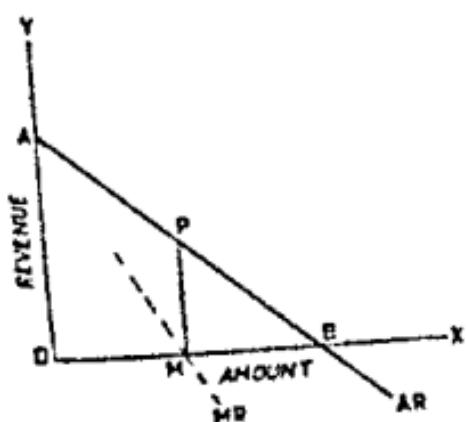


Fig 16.5

When more is produced, total cost increases because the cost of producing additional units cannot be negative, i.e. zero. Additional units will be produced if their sale yields some profit. In other words, revenue due to them must be more than their cost. As their cost is positive, additional revenue

must be positive. In the above diagram, marginal revenue beyond  $OM$  is negative. Hence the output cannot go beyond  $OM$ . It must be within the length  $OM$ . And up to  $OM$  elasticity of demand is more than unity. Hence the monopolist must always operate within the elastic sector of his demand curve.

### MONOPOLY AND PERFECT COMPETITION COMPARED

We may now note the difference between the respective situations which confront a monopolist and a competitive producer. In making this comparison, it would be convenient if we assume that in the competitive market, which we are considering, all producers have identical cost curves.

**Rentless rates.** We have already noted one difference. Marginal average revenue curves facing a competitive producer coincide and the resultant single curve runs parallel to the  $x$ -axis. Such curves facing the monopolist remain quite separate. Both curves slope downwards to the right, marginal revenue lying below the average revenue curve. Thus, while in equilibrium under perfect competition, marginal cost of a producer equals both marginal as well as average revenue, in monopoly, marginal cost is equal only to marginal revenue and is less than the average revenue or price. In fact, it is this difference between the marginal cost and price which is said to measure the degree of monopoly.

**Slope of the cost curve at equilibrium first.** We have already noted (in Chapter XV) that in fact there are two conditions of equilibrium of a firm. One is that marginal cost equals marginal revenue. The other is that in position of equilibrium, marginal cost curve must intersect the marginal revenue curve from below. As the marginal revenue curve facing the competitive producer is parallel to the  $x$ -axis, this second condition can be fulfilled only if the marginal

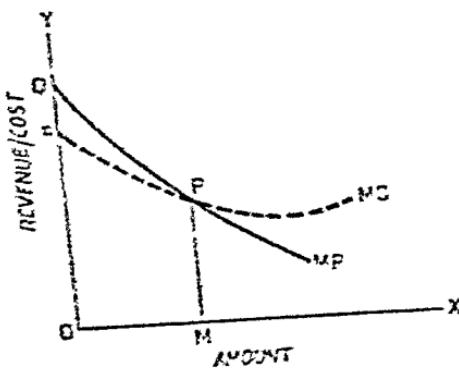


Fig. 16-6

at the point of equilibrium. In the case of a monopoly, however, marginal revenue curve is sloping downwards. Hence it is possible for a marginal cost curve to intersect it from below as shown in Fig. 16-6. Of course, the slope of the marginal revenue curve will be steeper than that of marginal cost curve. Thus, while in competition, marginal cost curve must be rising at the point of equilibrium, in monopoly it may be rising, falling, or even being parallel to the  $x$ -axis.

**Profits** We have seen that in perfect competition, equilibrium is established at a point where profits are neither below nor above normal. A monopolist does, however, earn supernormal profit though the existence of such profits is not a condition essential to equilibrium. We have already shown above that even a monopolist might be in equilibrium with normal profit and no more (Fig. 16.4)

Lastly, let us compare conditions of price and output under monopoly with those under perfect competition, assuming that conditions of production do not change. Consider Fig. 16.7

Under perfect competition  $AR$  is the demand curve for the industry as a whole. Price would be  $AT$  and output  $OT$ . At this price every producer will be faced with a marginal revenue curve coinciding with the average revenue curve and running parallel to a axis. Everyone of them will equate marginal cost to marginal revenue and price. The aggregate of their outputs will be  $OT$ .

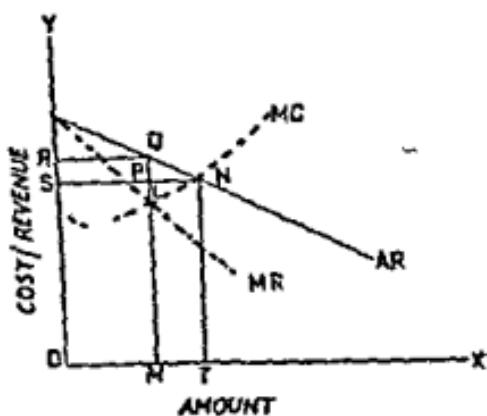


Fig. 16.7

The monopoly price is higher and output less than in perfect competition, conditions of demand and cost remaining unchanged.

Now let us suppose that the producers form a centralised cartel. Marginal cost curve will remain the same.  $AR$  will be the average revenue curve facing the cartel and  $MR$  the corresponding marginal revenue curve. Output will fall to  $OM$  and price will rise to  $QM$ . Thus, in monopoly price is higher and output less than in perfect competition, conditions of demand and cost remaining unchanged.

### PRICE DISCRIMINATION

**Forms of price discrimination** Price discrimination means charging different prices from different customers. There are many forms which such a policy may take. Discrimination may be done on the basis of quantity purchased. We are all familiar with the fact that wholesale prices are lower than retail prices. A very interesting case of price discrimination by amount existed in India in the 'thirties,' when railways, due to competition from road transport charged lower rates for short distances and higher rates for long distances. Price discrimination by the type of sale is also possible. Medical practitioners usually charge higher fees for visits at night and lower fees for visits during the day. Discrimination by customers is another possibility. By changing the name or packing, a seller may be able to charge a higher price from snobbish buyers and a lower one from others. Similarly, there may be one price for the rich and another for the poor.

In any case, a seller for purposes of price discrimination, divides his market, according to one criterion or another, into different parts and treats each part as a separate market. He may divide the market into as many parts as the number of buyers. We would for our study take the case of discrimination between two markets, buyers in each being distinguished from buyers in the other by a readily recognisable mark. We also assume that in each market the number of buyers is large and competition among them is perfect.

*Fundamental condition.* Price discrimination is impossible if there is perfect competition among sellers because then market, by assumption, is frictionless and difference in price cannot persist. Discrimination is possible under conditions of imperfect competition only if there is some tacit or explicit understanding on the part of all sellers. Thus, doctors can charge higher fees from the rich and lower fees from the poor, only if all medical practitioners, by convention or otherwise, adopt a similar policy. In case, however, there is some understanding, it becomes a combination which eliminates competition in that respect. Hence one condition for practising price discrimination is the absence of competition, i.e., there is a monopoly.

*Immediate cause.* Though monopoly is a condition essential for price discrimination, yet it is neither a sufficient condition nor the immediate cause of its existence. The immediate cause exists in the fact of elasticities of demand in the two markets being unequal at the single monopoly price. In such a case it is profitable for the monopolist to raise the price where demand is less elastic and to lower it where demand is more elastic. For, when the price in the former is raised, contraction in amount demanded is small so that total revenue increases much. And when price is lowered in the other market, extension in amount demanded is large so that increase in revenue is substantial. If, however, conditions of demand in the two markets are such that elasticities of demand in the two markets at single monopoly price are equal, the monopolist would not resort to discrimination. For, he cannot expect to increase profit by transferring output from one market to the other. Additional revenue in one market will be less than the loss of revenue in the other.<sup>3</sup>

*Sustaining conditions.* There are two sustaining conditions for price discrimination. First, purchasers in one market cannot transfer themselves to the other market. If the rich could assume to be poor, doctors will fail in their policy of charging higher fees from the former. Second, purchasers in one market cannot purchase from purchasers

3 Algebraically it can be shown thus :—

$$\text{Marginal revenue} = \text{Average Revenue} \times \frac{c-1}{c}$$

If in the two markets average revenue (single monopoly price) and elasticity of demand are equal, the marginal revenue will also be equal. And when marginal revenue is equal, transfer of one unit from one market to the other will be a loss equal to marginal revenue in one market and gain of less than revenue in the other.

in the other market. Otherwise, purchasers of the dearer market would not go to the monopolist and would purchase from their counterparts in the cheaper market.

We conclude that if the seller is not a monopolist, price discrimination *cannot exist*. If elasticities of demand at single monopoly price in the two markets are not unequal discrimination *will not exist*. And if units of the commodity or the purchasers can be transferred from one market to the other discrimination may be started but it can not stay for long.

### PRICE OUTPUT POLICY UNDER PRICE DISCRIMINATION

*Equality of marginal revenue in both markets* Let us suppose there are two markets *A* and *B* and that at single monopoly price elasticity of demand is higher in market *A* than in market *B*. Occasion for price discrimination will then exist. We know that —

$$\text{Elasticity of demand} = \frac{\text{Price}}{\text{Price - marginal revenue}}$$

*Price being equal, marginal revenue will be higher in the market *A** in which elasticity of demand is higher. This means that if the monopolist diverts one unit of his sale from market *B* to market *A*, loss of revenue in the former will be less than the gain of revenue in the latter. The monopolist will continue his policy of diverting sales from market *B* to market *A* till marginal revenue in the two markets is equal. Price in *A* will then have fallen and that in market *B* will rise. When marginal revenue in the two markets has thus been equalised any diversion of sale in one direction or the other will reduce his profits. One condition for equilibrium therefore is that marginal revenue in the two markets is equal.

*Equality of marginal cost and marginal revenue* The other condition is equally obvious. His marginal revenue in each market must be equal to the marginal cost of his total output. If marginal cost is higher than marginal revenue in either market he will increase his profit by cutting down his sale there and *vice versa*. Equilibrium will be attained when there is no inducement for him to increase or reduce his output. The two conditions of equilibrium can be put in an equational form as under:

$$\text{Marginal revenue in market } A = \text{Marginal revenue in market } B = \frac{\text{Marginal cost of total output}}{}$$

*Working of the two conditions* To understand how these two conditions will be actually fulfilled, we must draw aggregate marginal and average revenue curves. These curves are obtained by the lateral summation of relevant curves in the two markets. This can be more easily understood by reference to schedules. Let us illustrate by taking the demand schedules

TABLE 16-b

(1)	(2)	(3)	(4)
Price or Average Revenue (Rs.)	Amount demanded in Market A (Units)	Amount demanded in Market B (Units)	Aggregate Amount demanded (Units)
10	200	350	550
11	190	335	525
12	180	320	500
13	170	308	478
14	160	295	455
15	150	278	428

Columns (1) and (4) give us the aggregate demand schedule. When this demand schedule is plotted into a graph, we get aggregate demand curve, i.e., the aggregate average revenue curve. If we draw a curve marginal to the aggregate average revenue curve, we get the aggregate marginal revenue curve. Or else, the aggregate marginal revenue curve can be traced independently, just in the same manner in which aggregate average revenue curve has been traced.<sup>4</sup>

4. Diagrammatically, it can be shown as follows:—

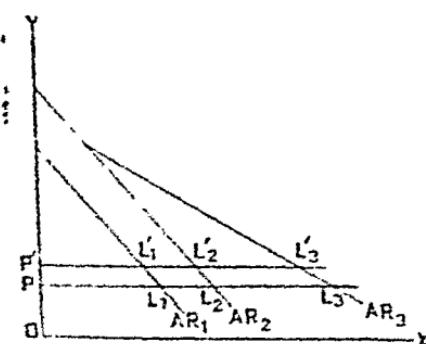


Fig. 16-8

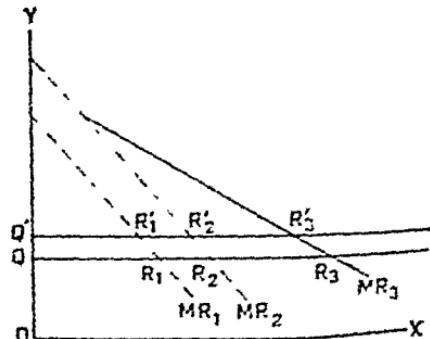


Fig. 16-9

In Fig. 16-8,  $AR_1$  and  $AR_3$  are respectively average revenue curves of markets A and B. When price is  $OP_1$ , amount demanded in market A is  $PL_1$  and in B is  $PL_2$ . Aggregate demand is  $PL_3$ , so that  $L_2 L_3$  is equal to  $PL_1$ . Similarly, corresponding to  $OP'$  the point on the aggregate demand curve is  $L'_3$ . Proceeding in this manner we trace the whole  $AR_3$ , which is the aggregate demand curve.

In Fig. 16-9, corresponding to marginal revenue  $OQ$ , amounts demanded in the two markets are  $QR_1$  and  $QR_3$ .  $R_3$  then lies on the aggregate marginal revenue curve if  $R_2 R_3$  is equal to  $QR_1$ . Similarly, we can trace the whole  $R_3$ , the aggregate marginal revenue curve.

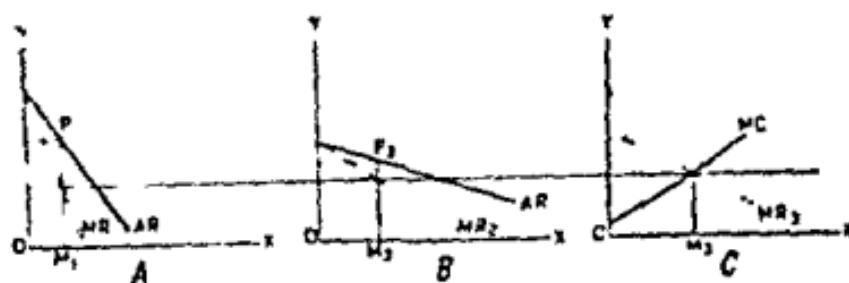


Fig. 16.10

In Fig. 16.10, diagrams A, B and C have been drawn to the same scale.  $AR_1$  and  $MR_1$  are the average and marginal revenue curves for market A.  $AR_2$  and  $MR_2$  are the same for market B.  $MR_3$  and  $MC$  are the marginal revenue and marginal cost curves for total output. Aggregate marginal revenue will equal marginal cost with the output  $OM_3$ . This is the equilibrium output. Amount sold in market A will be  $OM_1$  and price  $P_1 M_1$ . In market B amount sold will be  $OM_2$  and price  $P_2 M_2$ . Obviously the price in market A is higher than in market B.

#### Demand

he has to lower the price not only for the surplus units but for his entire sale. He may find it more profitable to dispose of the 'surplus' abroad at a lower price than to sell it at home at a higher price. For instance, suppose the demand conditions at home are such that—

TABLE 16-c

Amount (Units)	Demand price (Rs.)	Sale proceeds (Rs.)
100	10	1000
120	9	1080

By selling 120 units at home, his sale proceeds are Rs. 1,080. If, instead, he were to sell 100 units at home for Rs. 1,000 and the balance abroad at, say, Rs. 5 per unit, the aggregate sale proceeds will be Rs. 1100. Hence it is profitable to sell the surplus twenty units at Rs. 5 each abroad, than at Rs. 9 each at home.

In fact he may prefer to sell the excess of twenty units abroad even at a loss. For, once he reduces the price at home, it may be difficult for him to raise it again for fear of "consumer resistance". And if he does raise the price after once lowering it, the amount demanded at this price may be lower than before and may not return to the original level for a long time. Rather than spoil the home market he will prefer to dump the excess abroad and may sell it at price a which brings him less than the marginal cost.

2. Dumping may be resorted to when the producer is facing severe competition in the foreign market. He then undercuts his rivals in the foreign market. He may go to the extent of charging a price lower than even the marginal cost because he is in a position to cover up his losses from sales at home because the demand there is inelastic and, hence, profits are high. The purpose is to push out the rivals in the foreign market. Once they have been pushed out, he becomes the monopolist or one among the few left. Price can then be raised and profit pitched to the maximum.

3. A producer might sell at a lower price in a foreign market to reap the benefit of increasing returns. As he produces more, average and marginal costs may fall. But, by assumption, demand in the home market is inelastic. To sell the additional amount, reduction to be made in price may exceed the reduction in average cost. Not only that. Lower price has to be charged on all units and not on marginal units only. Marginal revenue is, therefore, much less. It may be more profitable, in these circumstances, to sell the additional amount abroad at a lower price. This will be clear from the following table.

## CHAPTER XVIII

### IMPERFECT COMPETITION

We have to consider two more market forms, *viz.*, monopolistic competition and oligopoly. In the case of the latter many variants of the situation are possible. Definite conclusions are difficult to arrive at in oligopoly. We shall, therefore, consider only one case of it based upon simplifying assumptions.

#### MONOPOLISTIC COMPETITION

*Characteristics.* As explained in chapter XIII, monopolistic competition is a market form characterised by a large number of sellers and product differentiation. The number of sellers being large, if any one of them changes the size of his output, it will not have any perceptible effect on the prices and demand curves of other sellers. Similarly, actions of the other individual sellers do not have any perceptible effect on him.

Some writers have discussed the problem of monopolistic competition on the assumption that entry of new firms is blocked by the sellers or by the government. This is assuming improbabilities. When the number of sellers is *very large*, formation of a combination is well high impossible. And if the government has deemed it right to allow a *very large number* into the industry, there is no reason why it should stop others from entering it.

*Difficulties of drawing curves.* In monopolistic competition it is difficult to draw the cost and demand curves of the industry as a whole. Cost curves are difficult to draw, because products of different producers are not identical. When we speak of a larger amount of a commodity being produced, we cannot say what grades are produced in larger amounts. Similarly demand curve is difficult to draw because as in the cost curves, it is not possible to assign a definite meaning to the quantity axis. And here there is an additional difficulty in that there is no single price. It is, therefore, possible to draw the cost and revenue curves of individual producers only.

*Demand curve for an individual's product.* As the number of sellers is large, demand for the product of anyone of them is highly elastic. If he reduces the price, he may attract a very large number of buyers from other sellers. Similarly, he will lose a large number of buyers if he raises his price. Because of product differentiation, however, the demand curve will have some downward slope. Even when he raises the price, some buyers will stick to him. And if he lowers the price, some buyers will continue to stick to others. In other words, under monopolistic competition, demand curve facing an individual seller is, over the relevant portions, highly elastic but not perfectly elastic. It does not run parallel to the  $x$ -axis but its downward slope

will be slight. Consequently, neither do the marginal and average revenue curves of an individual seller coincide, nor does either of them run parallel to the  $x$  axis. His marginal revenue curve lies below his average revenue curve and the slope of both is small.

*Short period.* Possibilities in the short run are just the same as in other market forms. As productive capacity cannot be increased, profits may be very high. And as the existing plants cannot be scrapped, profits may be very low. There may even be losses, but the loss of any individual firm cannot exceed its total fixed cost. Otherwise, it will stop production. Existence of full equilibrium is improbable.

*Long run equilibrium.* Coming to the question of long run equilibrium, we have to remind ourselves of the two conditions of equilibrium i.e., individual firms are producing equilibrium output and there is no tendency for the number of firms to change. The first condition is fulfilled when every firm is earning maximum profit, that is, when its marginal cost is equal to its marginal revenue. Let us see how the second condition can be fulfilled.

Monopolistic competition resembles perfect competition in the fact of free entry and exit. Free exit ensures that profit earned by any individual firm cannot be below normal. And, assuming that factors of production are available in identical units and are in perfectly elastic supply, there will not be any supernormal profits. Existence of any supernormal profits will attract new firms who will share some demand with the existing firms. This will shift demand curves facing existing sellers to lower positions and thus lower the level of their profits.<sup>1</sup> Equilibrium will be established at a point where every seller is earning just the normal profit—neither more, nor less. Fig 17.1 shows the position of an individual seller under monopolistic competition.

$AR$  and  $MR$  are the average and marginal revenue curves while  $AC$  and  $MC$  are the average and marginal cost curves.

$OQ_1$  is the equilibrium output. With this output marginal cost equals marginal revenue ( $Q_1M$ ) and also average cost equals

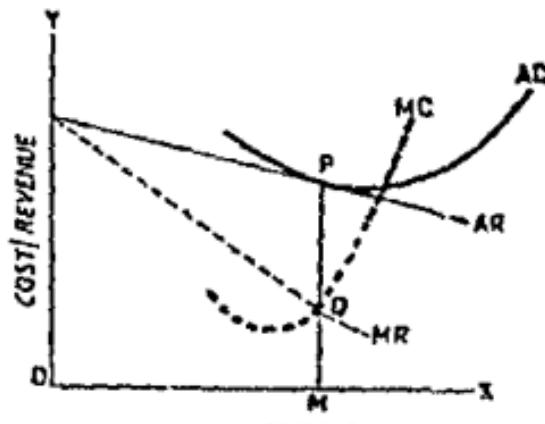


Fig 17.1.

<sup>1</sup> If supply of factors were not perfectly elastic cost of new firms will increase the demand for factors and their prices would rise. This will drive the cost curves of existing sellers to upper positions and their profit will be further lowered.

average revenue ( $PM$ ). Marginal cost being equal to marginal revenue in the case of each firm, there is no tendency on the part anyone of them to increase or reduce its output. And as every one of them is earning normal profits, there is neither any tendency for existing firms to quit nor for new firms to enter the industry. Full equilibrium will have been established.

*Comparison with perfect competition.*

It is interesting to compare the conditions of equilibrium under monopolistic competition with the same under perfect competition (with identical cost curves). In both cases, for every firm marginal cost equals marginal revenue and average cost equals average revenue. But, while in perfect competition marginal cost equals price, in monopolistic competition it is less than the average revenue or price. This means that in equilibrium marginal cost must be less

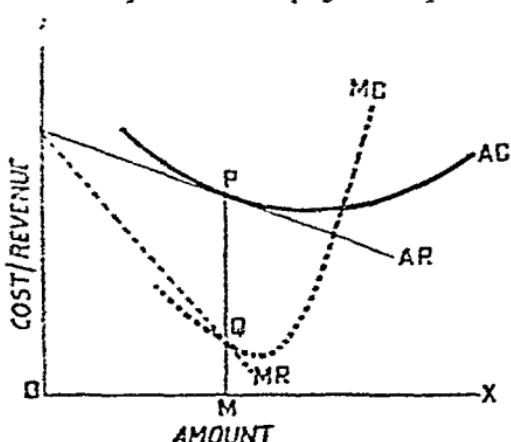


Fig. 17.2.

than average cost. Now, marginal cost is less than average cost when average cost is falling. Hence while in perfect competition equilibrium is established at the point where average cost curve begins to rise, in monopolistic competition the average cost curve is falling at that point. Marginal cost curve may be rising or may be falling. Possibility of equilibrium at a point where marginal cost is rising has been depicted in Fig. 17.1. The other possibility of equilibrium with falling marginal cost is shown above (Fig. 17.2).  $AR$  and  $MR$  are the two revenue curves while  $AC$  and  $MC$  are the two cost curves.  $OM$  is the equilibrium amount. With this output marginal cost is  $QM$  (equal to marginal revenue). At  $Q$  marginal cost curve is sloping downwards.

### OLIGOPOLY

*Possibilities of varied reaction to policies of a firm.* In an oligopoly there are a few sellers. They may be two or more but their number is sufficiently small so that price-output policy of every firm influences the same of others, and in turn its policy is influenced by the actions of others. The situation is essentially different from that under monopoly, or perfect or monopolistic competition.

When there is one seller, he can decide his price-output policy without considering how other producers will react to it, because, ~~and not on~~, products of others are only distant substitutes of his. Similarly when the number of sellers is large, actions of an

individual do not appreciably affect others. There is, thus, no reaction from others which he must take into account while deciding the size of his output. A producer in oligopoly cannot decide his price-output policy without considering how others are apt to react to it. Every action on his part is likely to produce some reaction from others and he may again have to revise his policy in view of this reaction.

Reaction from others is unpredictable. Suppose he raises the price. Will new firms enter the industry? Entry may be free and easy, or free but difficult, or blocked. If entry is free but the industry is one of large investments, the result will depend upon the resources and venturesomeness of outsiders. Similarly suppose he lowers the price. Others may also lower it as much or they may not lower it at all or they may lower it more than he does. Thus, how much will be his sale at the new price depends on how others react to his cut in price. Now, even if it is known that others will lower the price as much as he does the position still remains indeterminate. For, we cannot say how the buyers will decide to divide their purchases among the different sellers after the price cut. There are still other possibilities. As he lowers the price, some of the sellers might have decided to raise their prices. Another possibility is that in reply to his reduction in price, other producers place in the market new attractive varieties of their products. Now, suppose that he decides to produce and sell more. Will he have to lower the price? Yes, if others do not change their quantities produced. And if others also simultaneously decide to produce more, the necessary reduction in price may be large. It is also possible that others reduce their outputs and sales in response to a fall in price. Such situations become more unpredictable if there is product differentiation and still more so if cost conditions are not identical, different producers being unequally efficient.

**Assumptions** Oligopoly thus represents a variety of market situations and in each situation there are a number of possibilities of reaction to any given change. Precise conclusions in a general form are, therefore, impossible to arrive at. Conclusions will be different in different situations and on different assumptions about reactions to given policies. All that we can do is to study a simplified situation. We make the following assumptions —

1. There are only a few firms, all with equal facilities of investment.
2. They all produce products which are identical in the eyes of the buyers.
3. They are all equally efficient so that their cost curves are identical.
4. There is no tacit or expressed collusion among them.
5. At equal prices buyers distribute their custom equally among them.

6. They are not prepared to suffer losses just on the satisfaction that their rivals are also suffering losses.

*Limits on profit.* As the product of all of them are identical in the eyes of the buyers, there will be no product differentiation and, hence, no producer can charge a price higher than others. If some one lowers the price, buyers will rush towards him till either he raises the price, or others are also compelled to lower theirs. Thus, there can be only one price in the market<sup>2</sup>.

Now, if all charge the same price as they must, all sellers in view of assumptions (3) and (5) will earn equal profit. Either the profit of all of them are normal, or below normal, or abnormal.

We know that if all of them were to associate themselves into a cartel, they will fix a price which would give them maximum monopoly gain. Let us call this Cartel Price. On the other hand, if they resort to a price war, they will, in view of assumption (6) ultimately stop at a level where they are all earning normal profits. Let us call this Competition Price.<sup>3</sup>

Price cannot be lower than Competition Price. Otherwise, profits will be below normal. Some of them will have to quit the field because they cannot live just on the satisfaction that others are also suffering. Price, on the other hand, can be higher than Cartel Price because though every seller will soon realise that he can increase his total profit by lowering the price, but none may lower it for fear of competitive cuts. All depends upon with what price they start. Suppose they start with a price higher than the Cartel Price. None may reduce it because of the fear that a price war might develop. Or they may reduce the price. Then, they might stop at the Cartel Price or they might go lower, every one hoping to increase his individual profit but ultimately finding it diminished. And once price stands low, raising it is very difficult, almost impossible.

The only conclusion we can arrive at is that profits cannot be below normal. Beyond that the position is indeterminate.

#### SELLING COSTS

*Meaning and forms of selling costs.* Costs incurred by a firm may be classified into production costs and marketing costs. The latter may further be split into costs of transportation (including insurance, banking, etc.) and selling costs. Up till now we have taken into account only the production costs and costs of transportation. Let us now study the implications of selling costs.

2 Of course it is assumed that market is frictionless.

3 Terms "Cartel Price" and "Competition Price" are being used in these specifically for this purpose.

Selling costs are those which are incurred by a firm to persuade buyers to purchase its product in preference to those of other firms. Most important form of selling costs is advertisement. Sometimes a seller may distribute his product freely. Producers of *Birds* often do so in our country. Again selling costs may take the form of free distribution of subsidiary products or services. This distribution may be in proportion to actual purchase or may be independent of it. For instance a buyer may be given a free tooth brush with every tube of tooth-paste. An example of the second kind exists in the supply of free air at petrol pumps.

*Importance of selling costs.* When market is imperfect selling costs may help a firm to create and increase demand for its product. When buyers in different parts of the market do not have a complete knowledge regarding the price and supply in different parts of the market, the seller can extend his sales by informing buyers of the existence and uses of his product. This process does not end there. The buyers have to be reminded time and again that the product continues to be produced and sold. The role of selling costs assumes a still greater importance if there is product differentiation. It then becomes the function of selling costs to make repeated efforts to convince the buyers of the superiority of the product of the firm. In fact, even when products of two firms are otherwise identical, selling costs incurred by one firm may succeed in convincing the buyers that its product is superior to that of the others. Hence while product differentiation creates the necessity of incurring selling costs, selling costs in their turn are apt to produce product differentiation.

Selling costs have no part to play in a perfectly competitive market where neither is knowledge imperfect nor is there any product differentiation. A monopolist may incur selling costs to acquaint the people with his product but once that is achieved, selling costs are left with a minor role. Selling costs have a really important part to play in monopolistic competition (and also in differentiated oligopoly). In this market form the number of sellers is large, knowledge of buyers is imperfect and there is product differentiation. Because of all these factors, a producer under monopolistic competition is unlikely to be successful unless he continues to spend some amount under the heading of selling costs.

*Selling costs and the cost curves.* That selling costs increase total costs is self-evident. If they take the form of "one free tooth brush with every tube of paste," the effect on costs is easy to calculate. Total cost will increase by the cost of brushes equal in number to the tubes of paste produced. For every size of the output, average as well as marginal cost will be higher by the cost of one brush. Thus, the average and marginal cost curves of the firm, after the selling costs begin to be incurred, will lie above the original cost curves by the length representing cost of a tooth brush. This is shown in Fig. 17.3.  $AC$  and  $MC$  are the cost curves without selling costs while  $AC'$  and  $MC'$  are the same after selling costs are incurred at the rate of  $PQ$  per unit of output.

If selling costs are a fixed sum,—as in, say, one advertisement a week in a specific paper—they will not influence marginal cost after one unit while the effect on average cost will go on diminishing as the amount increases. In Fig. 17·4  $AC_1$  shows the position of a new average cost curve over  $AC$  (the original cost curve) which results from a fixed selling cost.

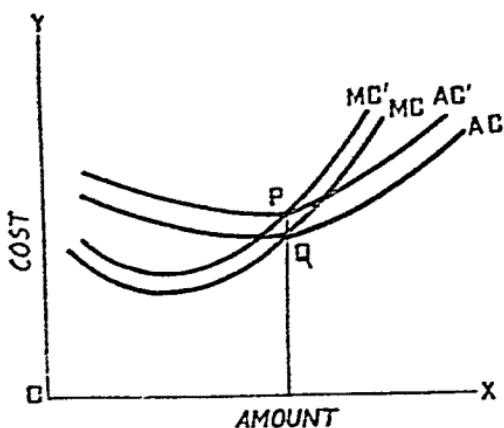


Fig. 17·3.

to calculate its effect on average cost  
effect on marginal cost.

*Selling costs and the demand curve:*

that the demand curve for the product of the firm shifts to an upper position. But one cannot be sure if there will be any such effect at all, and, if yes, how much this effect will be. A given sum of money spent may produce very good results, or poor results, or even no results at all. For instance, the firm may be the first petrol pump to start supplying free air

and hence may attract many new customers. If, on the other hand, it is one of the last few petrol pumps to do so, it will at the most ensure the loss of any (or any more) customers. Selling costs may not attract new buyers but only convince the old buyers still further of the firm's product. In that case, the demand curve will become less elastic in its upper portion, so that if price is raised, contraction in amount demanded is less. Selling costs may attract new customers but not increase the sale among old ones. Demand curve will become less elastic in its lower portion. Selling costs may achieve both these ends; they may achieve neither. Similarly, advertisement may bring customers from other industries but none or many to the advertiser. Thus an advertisement by a jute factory that jute matting is lasting, may bring over customers from coir matting, but these customers might purchase products of other jute factories. How-

a week in a specific paper—they will not influence marginal cost after one unit while the effect on average cost will go on diminishing as the amount increases. In Fig. 17·4  $AC_1$  shows the position of a new average cost curve over  $AC$  (the original cost curve) which results from a fixed selling cost.

If, however, selling costs take the form of free service independent of amount purchased, it is not possible and it is hard to define its

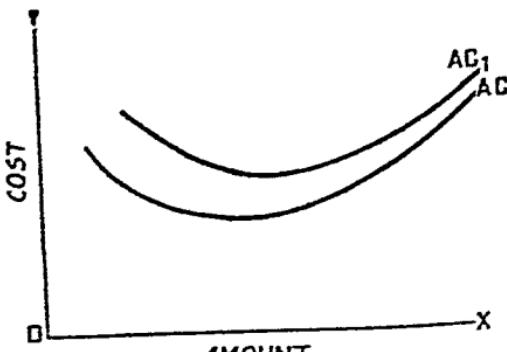


Fig. 17·4.

exactly will a given cost affect the demand curve, is thus difficult to say. The tendency, however, is on its part to shift the demand curve (the whole or a part of it) for the firm's product to an upper position.

### PRICE-OUTPUT POLICY WITH SELLING COSTS

**Assumptions** Analysis of the effect of selling costs on the price-output policy is rather a ticklish affair. Selling costs shift the cost curves up but it is difficult to forecast its effect on the demand curve. It depends on what other sellers are doing, or are likely to do. It depends on how buyers react to it. Notwithstanding these considerations, let us assume that the demand curve for a firm's product shifts up when selling costs are incurred and that the extent to which it so shifts is proportional to the amount spent as selling costs. Further assume that the seller is in a position to accurately forecast the effect of different amounts of selling costs on the demand for his product, so that he can locate his average revenue curves which go with different selling costs. With these two assumptions, let us consider two cases.

**1 Proportional selling costs** Suppose selling costs take the form of a tooth brush with every tube of tooth paste". Total selling costs will be proportional to the size of the output. The new average cost curve will lie above the old by the extent of cost per tooth-brush. The costlier the tooth-brush, the higher will lie the average cost curve and also, by assumption, the higher will lie the average revenue curve. The accompanying diagram shows the position when a given

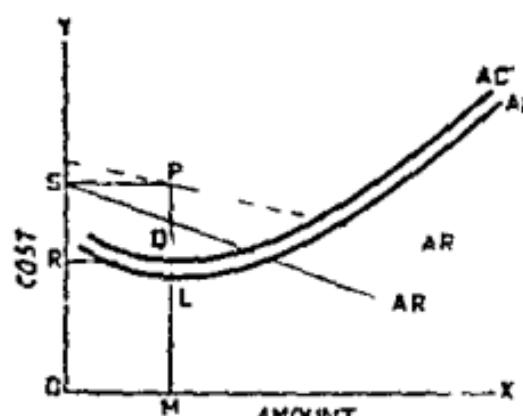


Fig. 17.3.

quality of tooth-brush goes with a tube

$AR$  and  $AC$  are the average revenue and cost curves without selling costs.  $QL$  represents the cost per tooth brush.  $AR'$  and  $AC'$  are the curves with this selling cost. Area  $PQRS$  measures the maximum profit which can be earned with these selling costs. Similarly diagrams can be drawn for other levels of selling costs. The producer will choose that tooth brush which maximizes his profit.<sup>4</sup>

**2 Fixed selling costs** Let us assume that selling costs take the form of a given number of advertisements per week. Also suppose that one advertisement costs him Rs. 100. Rise in average cost due to a

<sup>4</sup> It must be noted that profit with no selling costs may be more than profit with any level of selling costs. In that case he will not incur any selling costs.

given selling cost is inversely proportional to the output. The larger the output, the smaller the addition to the average cost.

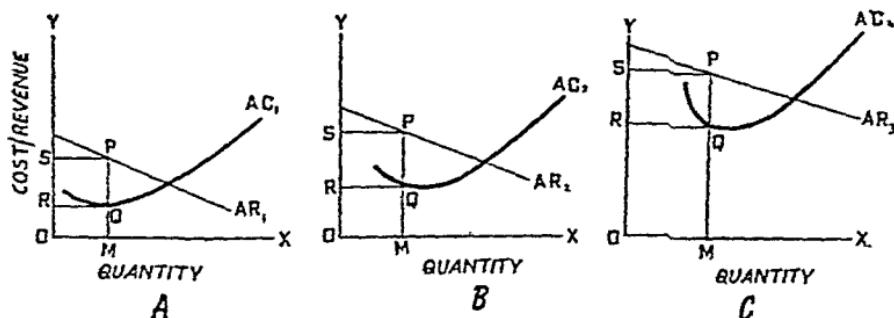


Fig. 17.6.

In Fig. 17.6, diagram (A) shows the position of average cost and revenue curves when no selling costs are incurred. Diagram (B) shows the position when there is only one advertisement per week. Diagram (C) shows the position when there are two advertisements a week. The area  $PQRS$  represents profit in each case. The producer can thus calculate his profit with different selling costs. He will choose that number of advertisements which make his profit maximum.<sup>5</sup>

<sup>5</sup> Once again it is possible that profits are maximum without selling costs, hence, he may decide not to advertise at all.

## CHAPTER XVIII

# PRICE DETERMINATION

### INTRODUCTORY

*Fundamental principle.* We have in the previous few chapters, discussed the question of equilibrium output of firms and industries in various markets. When equilibrium output has been found, it is easy to read off the equilibrium price on the demand curve or from the demand schedule. It is however instructive to study how the price of the product of an industry is determined. The fundamental principle in this respect is that price is determined by the interaction of the forces of supply and demand. Marshall has rightly compared these two sets of forces to the two blades of a pair of scissors.<sup>1</sup> Neither can the upper blade by itself nor the lower one do the cutting both have their respective roles to play. The lower blade may be kept stationary and only the upper one may be moved yet the work done by both is essential to the process of cutting. Similarly, supply may be fixed and demand variable with price yet the fixity of supply is as important a factor as the variability of demand in placing the price where it comes to stand.

*Market day.* We have studied the problem of equilibrium in respect of two periods the short run and the long run. There is yet another period to be introduced. It is known as market day or very short run. A market day is a period in which the maximum which can be offered for sale is limited by the existing stock. A market day is, however, not necessarily as long as a 'day'. If sugar factories are operated for only six months in the year, then in the remaining six months stocks of sugar set the limit on supply in that period. In the case of perishable commodities, like milk a market day might mean a part of the day.

We shall study the problem of determination of price with reference to market day, short period and long period. In all this discussion we shall assume conditions of perfect competition.

### MARKET PRICE UNDER PERFECT COMPETITION

*The demand curve.* In the market there are a large number of buyers and sellers. Our utility analysis and the substitution analysis brought us to the conclusion that the individual demand curve slopes downwards to the right. In other words amount demanded will be more if price is low and it will be less if the price is high. Of course this conclusion is based on the assumption that other determinants of demand do not change. The assumption holds good on a market

<sup>1</sup> *Principles Of Economics* (11 edn), p. 332.

day because it is too short for these factors to change. It must be noted that it is the demand curve facing the whole industry, which is downward sloping. Demand curve facing an individual firm is perfectly elastic and runs parallel to the quantity axis.

*Determinants of supply curve of a seller.* How much will a seller be prepared to sell at a price? It depends on a number of factors. One is the nature of the commodity. If the commodity is perishable and cannot be carried over to the next market day, he must dispose of the whole amount whatever the price.<sup>2</sup>

The other consideration is the intensity of his requirement for money. If needs of the family or the business are very pressing he may be prepared to sell a part or the whole of it at a lower price than otherwise.

The third factor is his estimate of the present and future condition of the market. If he thinks that the market is in short supply in comparison to demand, he will stiffen his attitude. In the reverse case, he will soften down. Similarly, if he is of the opinion that the price will be higher on the next market day or days, there will be a tendency on his part to withhold his stock. On the other hand, if he anticipates the price to fall on subsequent market days, he will be inclined to sell more or more inclined to sell the whole at a given price.

One important point to be noted here is that costs of production do not enter the calculations of a seller in deciding how much he would sell. For instance, suppose that price 'today' is below the cost of a seller, but his calculations lead him to the conclusion that it will fall still further 'tomorrow', he will be inclined to clear off his stock. On the other hand, he would not be inclined to sell his stock even on a price above cost "today", if he expects the price to rise still higher "tomorrow". If his need for money compels him to sell a part of his stock in spite of his expectation that price will rise, that would be a different matter. Costs of production constitute a consideration only when the amount produced can be varied. They enter the picture in the short run as well as in the long run. On a market day the question of increasing or decreasing output does not arise. Costs of production are, therefore, no consideration in determining the amount to be offered for sale.

*Market supply curve.* Nature of the commodity, intensity of seller's requirement for money and their estimates of the existing market conditions, as well as their anticipations, are given factors

2. In fact he will sell such an amount that the product of price and amount, that is his total revenue, is maximum. For instance, suppose his total stock is 100 units and that he can sell 100 units at Rs. 2/- each and 80 units at Rs. 3/- each. He will prefer to sell 80 units and destroy the rest or consume himself. If we assume that elasticity of his average revenue curve is more than unity in its relevant portions, then the statement, that he will sell the whole, is correct.

on any market day. The variable factor is price. At a given price some sellers will be prepared to sell while others will not be. If the price is higher, some more of them will become prepared to sell. And at a lower price, some more will give up their decision to sell.

In fact sellers divide (mentally) their stocks into portions. At a given price a seller may be prepared to sell one portion and not the other. If the price is higher, he may think of meeting some of his less urgent requirements of money which he does not at the lower price. He is thus likely to sell a larger proportion at a higher price. Similarly at a lower price he is likely to think of only the most urgent needs for money and thus reduce the proportion he is prepared to sell.<sup>3</sup> Consideration of future anticipations also brings us to the same conclusion. A seller may be holding the view that the price is going to rise on the next market day. Yet he discounts his own anticipations. Hence, though he will carry a large proportion of the stock to "tomorrow", yet he may sell a portion today. If the price were higher today so that the difference between this price and his anticipated price for tomorrow is not large, he may sell the whole amount today.

Thus the amount offered for sale is larger at a higher price and smaller at a lower price.

In other words, supply curve on a market day slopes upwards to the right. But the supply cannot be more than the total stock in the market. Hence beyond a point the supply curve runs parallel to the  $y$ -axis (showing price).

*Market day equilibrium*  
In Fig. 181,  $DD$  is the demand curve and  $SS$  the supply curve.  $OQ$  is the total stock in the market, therefore, beyond  $R$  the supply curve runs parallel

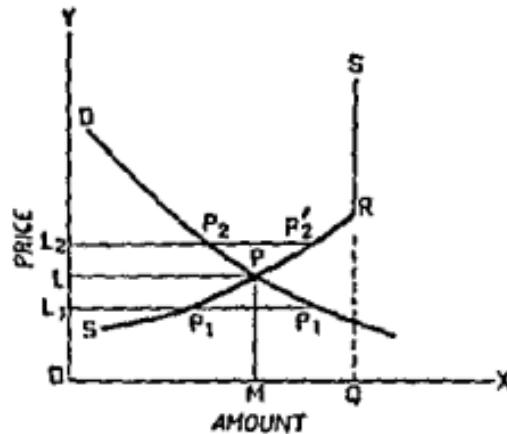


Fig. 181

to the  $y$ -axis. The two curves intersect at  $P$ .  $OL$  ( $PM$ ) will be the price at which amount demanded and amount supplied are both equal to  $OM$ . The price cannot be lower than this. For instance, suppose the price is  $OL_1$ . Amount demanded ( $L_1P'_1$ ) will exceed the amount which the sellers are willing to sell ( $L_1P_1$ ). The rush of buyers upon the sellers will induce the latter to hold back their stocks till the price rises. Nor can the price be higher

<sup>3</sup> The case of those who must have a fixed amount of money on a market day is an exception. They will sell more if the price is low and sell less if the price is high. Such cases are exceptions.

than  $OL$ . If, for instance, the price is  $OL_2$ , amount offered for sale ( $L_2P'_2$ ) will exceed amount demanded ( $L_2P_2$ ) and competition among sellers will push the price down. Thus equilibrium is established at a point where amount demanded equals amount offered for sale.

It may be that the market day opens with a lower or a higher price than  $OL$  on account of a hasty action on the part of some sellers or buyers. Forces of supply and demand will then go into action. If the price is lower than  $OL$ , competition among buyers will be more keen than among sellers and vice versa. Ultimately that price will come to prevail which equalises amount demanded with amount offered for sale. Market price is thus the price which ultimately comes to prevail on any given market day and at which amount demanded and amount offered for sale are equal.

If the commodity is perishable so that it cannot be carried over

to the next market day, its supply will be the same whatever the price. In other words, its supply curve will run parallel to the  $y$ -axis throughout its length.\* Equilibrium will be established at the point where this vertical curve intersects the demand curve. In fig. 18.2.,  $OM$  is the stock of the perishable commodity and hence a perpendicular on  $x$ -axis at this point ( $SM$ ) is the supply curve.  $DD$  is the demand curve and  $P$  the point of its intersection with

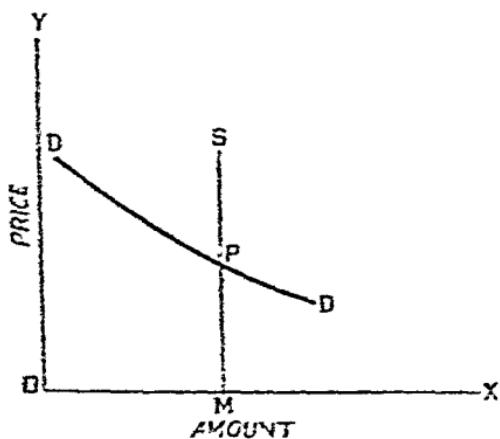


Fig. 18.2  
supply curve.  $PM$  will be the market price.

#### SHORT-RUN PRICE UNDER PERFECT COMPETITION

Let us continue to assume that determinants of demand other than price are given. Law of demand will then hold good and the demand curve will slope downwards to the right. The main problem is to find out the position and slope of the supply curve of the industry. Be it noted that in the short period an industry consists of a given number of firms with given productive capacities.

\* As already pointed out, this is on the assumption that elasticity of the demand curve over its relevant portions is more than unity.

*Supply curve of an individual firm* Let us try to trace the supply of an individual producer. Since the period is short, scale of plant is given and the output cannot exceed its maximum capacity. As he is a producer under perfect competition, his marginal and average revenue curves coincide and the resultant single curve runs parallel to the  $x$  axis. His problem is to maximise profit. At any given price therefore, he produces such an amount that his marginal cost equals his marginal revenue and price.

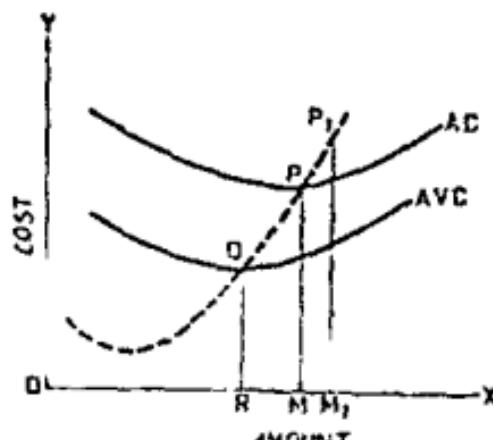


Fig. 16.3.

Now, consider the above diagram

$AC$ ,  $AVC$  and  $MC$  are respectively the average total cost, average variable cost and marginal cost curves. If the price is  $PM$ , he will produce  $OM$ , since this amount equilibrates marginal cost and price. Similarly, when price is  $P_1M_1$ , he produces  $OM_1$ . Hence marginal cost curve of an individual firm is its supply curve.

We know that price cannot be less than  $QR$ , the minimum average variable cost.<sup>5</sup> Hence only that portion of the marginal cost curve, which lies to the right of  $Q$ , is relevant. As  $Q$  is the minima point of  $AVC$  curve,  $AVC$  curve rises beyond it.  $MC$  curve, being marginal to the  $AVC$ , must also be sloping upwards to the right beyond  $Q$ . Thus in its relevant portion the supply curve of an individual seller slopes upwards to the right.

*Supply curve of the industry* The total supply of an industry at any time is the sum of supplies of individual firms. Supply curve of the industry is, therefore, only a lateral summation of the individual supply curves.<sup>6</sup> As all individual supply curves slope upwards to the right, supply curve of the industry as a whole will also slope upwards to the right. Also, aggregate output cannot be increased beyond the maximum capacity of existing plants. Hence beyond a point, this curve will run parallel to the  $y$  axis (showing price).

*Price determination in the short period* In Fig. 1,  $DD$  is the short-run demand curve and  $SS$  is the supply curve.  $OT$  is the maximum

5 Chapter XX.

6 It is on the assumption that the supply of the variable factors is perfectly elastic. Otherwise when all increase the size of their outputs, prices of variable factors will rise and the plant curves will change their slopes.

capacity of the existing plants. The supply curve, therefore, slopes upwards to the right up to  $R'$  and after that runs parallel to the  $y$ -axis.  $P$  is the point of intersection. Equilibrium will be established at the price  $PM$ . This, is known as short period equilibrium price. The amount produced will be  $OM$ .

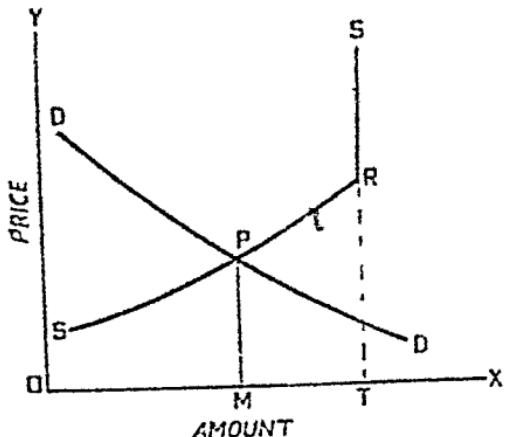


Fig. 18.4.

will reduce their outputs which will raise the price. Similarly, at a price higher than  $PM$ , producers will note that it is higher than marginal cost and they will extend their outputs and the price falls. Hence in the short run ultimately the price will settle at the point where the two curves intersect. In this case the point of intersection is  $P$  and consequently the short period equilibrium price is  $PM$ .

#### LONG-RUN PRICE UNDER PERFECT COMPETITION

Here again we assume that determinants of demand, other than price, are given and remain the same throughout the period under consideration. Law of demand will hold good. Demand curve facing the whole industry will slope downwards to the right, though demand curves facing individual sellers run parallel to the  $x$ -axis.

*The supply curve.* Extension in supply can come either from increased production by the existing producers, or by entrance of new firms or by both. Let us keep the two factors separate to properly understand their implications.

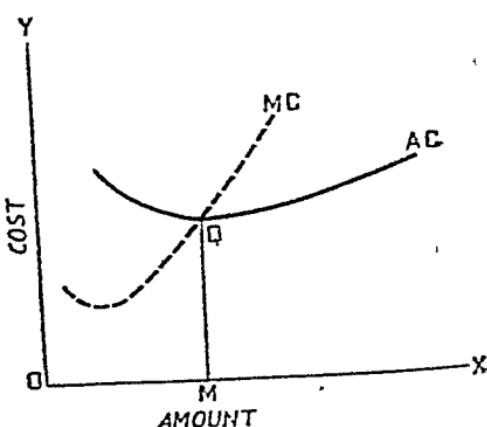


Fig. 18.5.

First let us consider the position of a firm. We know that the firm will be in equilibrium if it produces such an output that its marginal cost equals price. Marginal cost curve is, therefore, the supply curve of the individual firm.

In Fig. 18.5,  $AC$  is the planning curve of the firm and  $MC$  is the curve marginal to it. Output cannot be less than  $OM$  because diminishing costs are incompatible with perfect competition.<sup>7</sup> Hence only those portions of the two curves which lie to the right of  $Q$  are relevant.  $Q$  being the minima point of  $AC$ , to the right of it  $MC$  will be sloping upwards to the right.

If somehow it were not possible for the new firms to enter the field, the industry's supply curve would have been a lateral summation of the supply curves of existing firms. But perfect competition is characterised by free entry and exit.

*Condition of perfect elasticity of supply factors.* Let us suppose that new producers who may enter the industry are as efficient, and can get factors of production at the same price, as the existing producers. Then the price must remain at the level of minimum average cost of every individual firm. A rise in price will attract new firms and price will fall to the same level again. The number of firms will be such that price equals marginal and average cost of every firm. Hence supply curve of the industry will be perfectly elastic, running parallel to the  $x$  axis at a distance of minimum average cost of any given firm. The position of equilibrium is shown in Fig. 18.6.  $SS$  is the supply curve and  $DD$  the demand curve. Equilibrium price will be  $PM$  and equilibrium amount is  $OM$ .

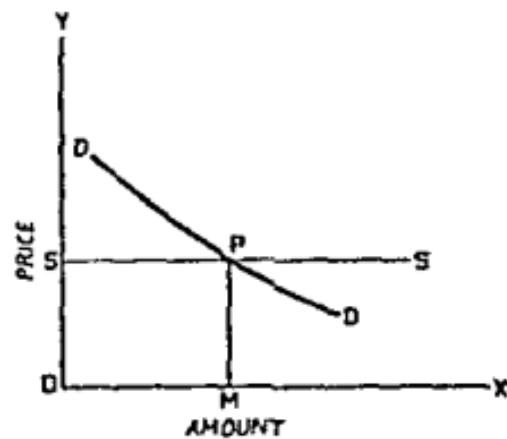


Fig. 18.6.

*Inelastic supply of factors.* Now suppose that entry of new firms is possible but the new entrants are not as efficient as the existing producers. Then the marginal cost curves of the new producers will lie above those of the existing producers. In this case, to attract new, less efficient, producers, or to induce existing producers to extend their outputs, a higher price is necessary. Larger supplies are thus to be associated with higher prices and vice

*versa.* Supply curve of the industry

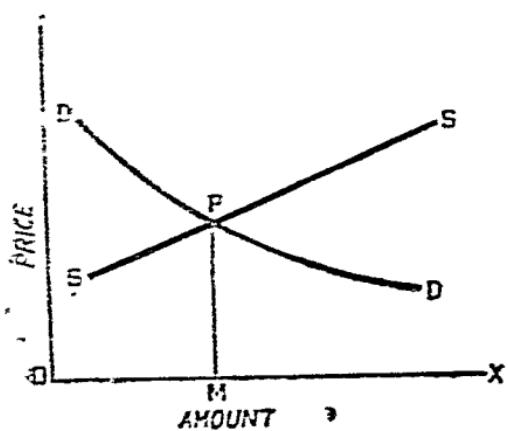


Fig. 18.7.

long-run normal level. The period might start with a lower or a higher price. But if and when adjustments have taken place, the price will be standing at the long-run normal price level.

#### COMPETITION PRICE AND CHANGES IN DEMAND AND SUPPLY

We have noted that whether the period is a market day, short-run or long-run, competitive equilibrium is established at the point where the supply and demand curves intersect each other. In all this discussion we ruled out the possibility of occurrence of certain changes. On the side of demand we assumed determinants of demand, other than price, as being given. In other words, we assumed that incomes, tastes, prices of related goods, population, etc., do not change. We have shown in Chapter V that a change in any one or more of these factors will change the position of the demand curve. Similarly on the side of supply we have ruled out inventions, discoveries, and changes in taxes, subsidies, etc., which will change the position of the supply curve. Let us now study the effect of such changes on the equilibrium price and output. This, would be a study in comparative statics.

*Effect of increase in demand on price.* First let us take a change in demand, say an increase in demand. What will be the effect of such a change on market price.

In Fig. 18.8  $DD$  is the original demand curve.  $D'D'$  represents an increase in

will slope upwards. But its slope will be less steep than that of the short-run supply curve because of the possibility of entry of new firms. Position of equilibrium in such a case is shown in Fig 18.7.  $SS$ , the supply curve, is sloping upwards but less steeply.  $DD$  is the demand curve.  $PM$  is the equilibrium price.

Long-run equilibrium price is also known as long-run normal price. It must be noted here also that

in the long run stand at the

price may not at any moment

in the long run stand at the

long-run normal price level.

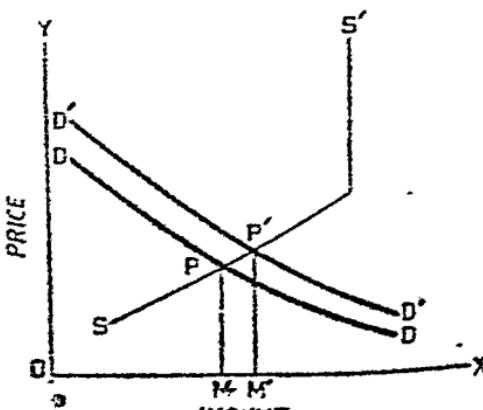


Fig. 18.8.

in demand will, therefore, raise the price and increase the equilibrium amount. The position is similar to the one shown in Fig. 18.8.

It must be evident that the effect of an increase in demand is different in different cases because the supply curve in the relevant portions may have an upward slope or may be parallel to either of the axes. It must also be evident that the effects of a decrease in demand would be just the reverse in every case. This can easily be seen by treating in the above diagrams  $D'D'$  as the original demand curve and  $DD'$  representing a decrease in demand.

*Effect of increase in supply on price.* When there is an increase in demand, the new demand curve lies to the right of the old one and takes an upper position. An increase in supply implies that more is supplied at every given price which means that every given amount has lower costs. Hence the new supply curve (in its rising portion) lies to the right of the old: it takes a lower position.

As the demand curve may slope downwards or be parallel to either of the axes, the effect of an increase in supply will be different in different cases.

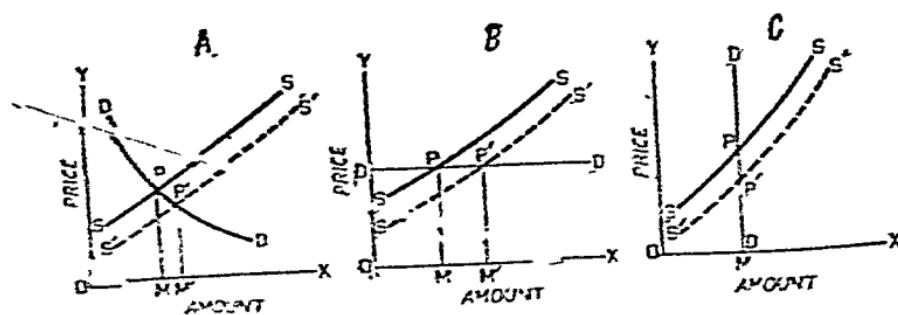


Fig. 18.11.

Fig. 18.11 brings out the differences in the three cases. In diagram A, demand curve slopes down to the right.  $SS$  is the original supply curve while  $S'S'$  is the supply curve representing an increase in supply. Obviously, the price falls from  $PM$  to  $P'M'$  and the amount extends from  $OM$  to  $O'M'$ . In case the demand curve runs parallel to the  $x$ -axis as shown in diagram B, the amount will increase but increase in supply will have no effect on price. Diagram C shows clearly that if elasticity of demand is zero, throughout the curve, an increase in supply will result in a rise in price, amount remaining unchanged.

#### CONCLUSIONS OF THE STUDY OF PARTIAL EQUILIBRIUM

*Perfect competition.* When competition is perfect, every firm finds itself in equilibrium at the point where the double equation is satisfied, i.e., where marginal cost and average cost.

price.<sup>8</sup> This is possible only when price settles at a point where marginal cost intersects the average cost curve. As we know, this occurs at the minimum point of the average cost curve. We know that the minimum point of the planning curve is also the minimum point of optimum scale of plant. Hence under perfect competition every firm uses the optimum scale of plant and operates it at its optimum capacity. Average cost is thus the minimum possible. In those industries, therefore, where perfect competition prevails, output is produced at the least possible cost per unit of output. In these industries the economic system attains the highest efficiency. Moreover, in perfect competition there is no place for advertisement and other selling costs. Production costs and costs of transportation are the only elements included in costs. Once again the average costs stand at their minimum. Price being equal to average cost, the consumer is benefited to the maximum from perfect competition. He gets the products at cheapest rates. He is enabled to purchase more goods with his given income and enjoy the maximum consumer's (or buyer's) surplus.

**Monopoly** A monopoly is in equilibrium when marginal cost equals marginal revenue. This is the only condition of equilibrium. Profit is, as a rule, above normal because entry is blocked for one reason or the other. A monopolist may incur some selling costs to expand the size of his market. He may do so to acquaint a larger number of people with the existence as well as uses of his product. In addition to production and transportation costs, therefore, the monopolist's cost may include selling costs. Moreover, though it is not impossible, yet it is improbable that the monopolist produces such an amount at which average cost equals average revenue. A monopolist's aim is to maximise his gain and this gain very largely depends on the difference between price and average cost. The consumer is, therefore, unlikely to get the product at average cost. He has to pay a higher price than that. The monopolist goes on charging this price, yet the existence of supernormal profit does not result in any expansion of output. There is, however, one saving feature. A monopolist is likely to produce a given output cheaper than if the same output were produced by a number of producers. He is in a better position to take advantage of the economies of scale. Because of this fact, it is not impossible to conceive of cases where, though the monopolist is earning high supernormal profit, the consumer is also getting the product cheaper than he could get if there were some competition.

**Monopolistic competition** In a state of equilibrium in monopolistic competition marginal cost equals marginal revenue and average cost equals average revenue. In this position average revenue curve

<sup>8</sup> This conclusion we arrived at in Chapter XV by assuming identical cost curves. In Chapter XXI we shall see that this conclusion holds good even in those cases where different entrepreneurs are of different ability or the supply of other factors is less than perfectly elastic.

is tangential to average cost curve. But, as the average revenue curve slopes downwards to the right, it can touch the average cost curve only in the falling portion of the latter. This means a double disadvantage. The point of equilibrium lies on the falling portion of the planning curve, therefore the scale of plant used by the firms will not be of the optimum size. And, secondly, equilibrium will be on the falling portion of the plant curve and hence the plant will not be used to its optimum capacity. Consequently there will be more plants and each plant will be used below its optimum capacity. Thus, there will be an excessive number of firms and each firm will have excessive capacity. But, it must be noted that the employed capacity of each plant is not very far from the optimum because the average revenue curve is very elastic (though not perfectly elastic). Nevertheless, the costs are above the minimum. Moreover, producers in monopolistic competition incur selling costs which increase the price for the consumer. Monopolistic competition has, however, the merit of providing the consumer with a broad range of qualities, colours and styles of the product. The consumer can adjust his purchase to his taste as well as his income.

## CHAPTER XIX

### WAGES

#### INTRODUCTORY

*Forms of income earnings.* There are four forms which income earnings of individuals might take viz., wages, interest, rent and profit. It is not essential that the earning of any individual takes only one of these forms. A person may own some land and may also be employed in a firm. His total earning will then be constituted of rent and wages. We now proceed to study how the levels of various kinds of earnings are determined. We start with wages.

*Definition of wages.* In Economics, wages are defined as the reward for human effort, of whatever kind or quality. It includes all such payments irrespective of the basis of such payments, or their period, or the name by which they are known in day-to-day parlance. Thus, the salary of a teacher, the fee of a doctor, the earnings of a foreman, and the honorarium of a (honorary) magistrate, are all wages for the economist. A distinction may, however, be drawn between earnings of independent workers and those of employees. Though both these kinds of earnings are wages, we shall consider only the latter type.<sup>1</sup> For the purpose of this chapter, therefore, wages may be defined as a stipulated payment which an employer makes to an employee.

*The problem.* At any time wages differ from man to man, so that rates of wages are different not only in different industries but also within the same industry. The latter type of difference can be explained by obvious factors like differences in working hours and efficiency, and ignorance, but above all by seniority. It is different rates of wages in different industries which deserve consideration. First let us study how wages in a given industry are determined. We shall assume, for simplicity, that all labour available to the industry is homogeneous.

#### MARGINAL PRODUCTIVITY OF LABOUR

*The relevant concepts.* Labour has an indirect utility. The work of a labourer derives its significance from the output which it helps to produce. Employment of labour has two aspects for the employers. Wages which he pays represent the loss aspect and the product due to labour is the gain aspect of it. In arriving at a decision about the employment of workers, he considers their productivity, on the one hand, and their wages, on the other—the return from and the cost of employing them.

Suppose an employer is to decide whether to employ a worker or not. If he employs him, his total product will increase, but his total wage bill will also increase. He will weigh the value of the

<sup>1</sup> Where the choice between becoming an independent worker or an employee is open to workers, wages will be equal in both the circumstances, because of competition.

additional product against addition to his wage bill. In other words, he shall weigh marginal product of labour against marginal wage and will employ him if the former is more than or equal to the latter, otherwise not. Hence the relevant concepts in this respect are the marginal product and the marginal wage, and not the total or average product and wage.

*Various meanings of marginal product.* There are three concepts of marginal product—marginal physical product, marginal gross revenue product, and marginal net revenue product. In a money economy an employer is interested, not in addition to the size of his output (*i.e.* not in marginal physical product), but in the net addition to the size of his total revenue. In technical language, an employer in making a decision regarding employment of a worker or workers, takes into account marginal net revenue product.

Let us explain it by an illustration. Suppose there are conditions of perfect competition in the shoe market as well as in the market for its workers. Further suppose that in one of the factories, fifty workers are already employed and are producing 120 pairs of shoes. Now, the employer is to decide whether to employ one more worker or not. Suppose that employment of this worker results in the production of two more pairs of shoes. The two pairs of shoes constitute the marginal physical product of labour. He will sell them in the market. Suppose price in the market is Rs. 10 per pair. As there is, by assumption, perfect competition in the product market, he can sell his additional output at the same price. Employment of an additional labourer thus brings him Rs. 20. This is the marginal gross revenue product.<sup>2</sup> In calculating the net addition to his revenue, we must remember that to produce the two pairs of shoes, the worker will use some leather, nails and other materials. Also there will be some additional use of the tools. Moreover, the sale of shoes may take some time but the worker has to be paid as he finishes his work. There is, therefore, some loss of interest. If deductions in respect of these factors are made from the marginal gross revenue product, we get the marginal net revenue product. Marginal net revenue product of a given number of workers is the net addition to the value of the output when an additional worker is employed. It may also be defined as the total value of additional output due to the marginal worker, if expenditure on other factors remains the same.

Now suppose that competition is imperfect in the product market. If the producer employs the worker in question, his output will increase by two pairs. To enable himself to sell this increased output, he will have to charge a lower price, not only for these shoes, but also for the 120 pairs which were already being produced. Hence in computing the marginal net revenue product of the worker

<sup>2</sup> Then under perfect competition:

Marginal gross revenue product = Marginal physical product  $\times$  Price.

we must deduct from the sale proceeds of the two additional pairs the loss of revenue on the previous amount Thus,

$$\left. \begin{array}{l} \text{Marginal net} \\ \text{revenue product} \\ \text{under perfect} \\ \text{competition} \end{array} \right\} = \frac{\text{Marginal gross}}{\text{revenue product}} - \left\{ \begin{array}{l} \text{Additional cost of materials} \\ + \text{additional cost of} \\ \text{tools} + \text{discount on advance} \\ \text{of wages} \end{array} \right.$$

And

$$\left. \begin{array}{l} \text{Marginal net} \\ \text{revenue product} \\ \text{under imperfect} \\ \text{competition} \end{array} \right\} = \frac{\text{Marginal gross}}{\text{revenue product}} - \left\{ \begin{array}{l} \text{Additional cost of materials} \\ + \text{additional cost of tools} \\ + \text{discount on advance of} \\ \text{wages} + \text{loss of revenue} \\ \text{on output of intra mar-} \\ \text{ginal workers due to a fall} \\ \text{in price} \end{array} \right.$$

### MARGINAL NET REVENUE PRODUCT CURVE

*Shape of the marginal physical product curve* We saw in Chapter X that marginal physical product<sup>3</sup> due to labour is a function of the number of labourers Suppose we increase the number of labourers one by one In the initial stages, the number of workers employed may prove too small for the given quantities of other factors Hence marginal physical product may increase as the number of labourers increases A point will, however, come when the law of diminishing returns begins to operate After this point, as the number of labourers is increased, marginal physical product will decline Thus, the marginal physical product curve will slope upwards to the right in the initial stages but after a point it will slope downwards to the right It is of the shape of an inverted U<sup>4</sup>

*Marginal net revenue product curve* Let us assume conditions of perfect competition in the product market Also assume that the prices of materials and tools and also the rate of interest are given I further assume that every worker causes the same wear and tear of tools and uses the same amount of materials Then marginal net revenue product will be proportional to marginal gross revenue product And as the latter is equal to the product of price and marginal physical product, marginal net revenue product will be

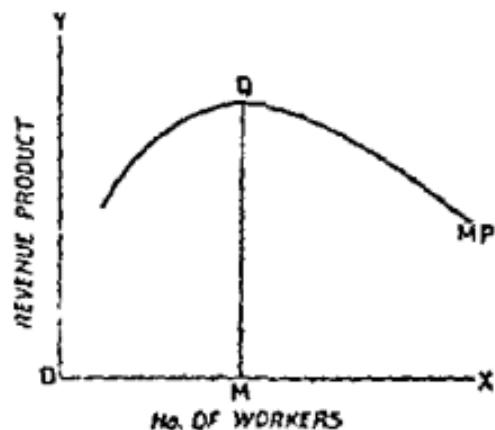


Fig. 19.1

<sup>3</sup> There we called it *marginal product* because the distinction between the three concepts was not considered necessary at that stage

<sup>4</sup> This has already been argued in Chapter X. The argument has been reproduced for readers convenience

proportional to marginal physical product. In other words, marginal net revenue product curve will be shaped like the marginal physical product curve, i.e., a marginal net revenue product curve will have the shape of an inverted *U*, as shown in Fig. 19.1.

*MP* is the marginal net revenue product curve (Fig. 19.1). Up to the point *Q*, marginal net revenue product curve rises so that marginal product is maximum (i.e., *QM*), when the number of workers employed is *OM*. After *Q* the curve slopes downwards to the right.

Now, suppose that competition in the product market is imperfect. Then as more is produced and sold, price falls. In the initial stages, therefore, as the number of workers is increased, marginal physical product increases, but marginal gross revenue product—and hence marginal net revenue product—does not increase as much. Similarly when marginal physical product falls, marginal net revenue product falls more rapidly. Hence the marginal net revenue product curve first rises less steeply and then falls more steeply than the marginal physical product curve. But, as with perfect competition, so with imperfect competition in the product market the marginal net revenue product curve has the shape of an inverted *U*.

*Interrelation of marginal and average product curves.* Like the marginal net revenue product curve, average net revenue product curve can also be drawn.

The relation between the two will be the usual marginal-average relationship. This is shown in Fig. 19.2, where *MP* and *AP* are respectively the marginal and the average net revenue product curves. Both slope upwards in the initial stages. When the number of workers employed is *ON*, *MP* begins to fall but *AP* is still rising till both of them are equal with employment at *OM*. After that both the curves slope downwards to the right, *MP* falling more steeply than *AP*.

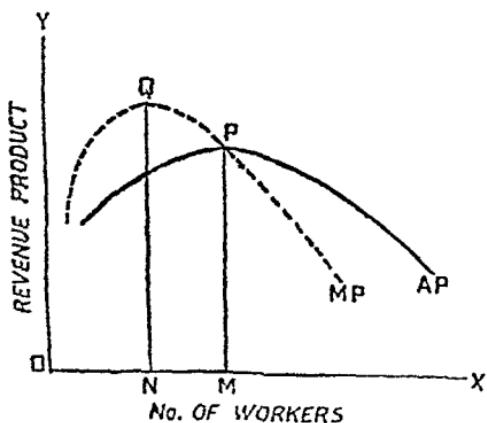


Fig. 19.2.

In the rest of this chapter we shall, for brevity, use the terms 'marginal product' and 'average product' instead of 'marginal net product' and 'average net revenue product'.

#### THE WAGE CURVES

*Perfect competition in labour market.* When competition in the market is perfect, there are a large number of employers as

well as workers. Demand for labour of any individual employer is insignificant as compared with total demand in the market. He is therefore, a price taker. The wage rate is a given factor for him. Suppose the wage rate in the market is Rs 5 per worker. Then the following table gives a portion of the wage schedules facing him.

TABLE 19 a

No of Workers employed	Average Wage Rs	Total Wage Bill Rs	Marginal Wage Rs
1	5	5	5
2	5	10	5
3	5	15	5
4	5	20	5
5	5	25	5

For any number of workers employed average and marginal wages are equal and both remain constant. In other words marginal and average wage curves coincide and the resultant curve—call it wage line—runs parallel to the x axis. In Fig. 19.3  $AB/ML$  is the wage line.  $OL$  is the wage rate prevailing in the market.

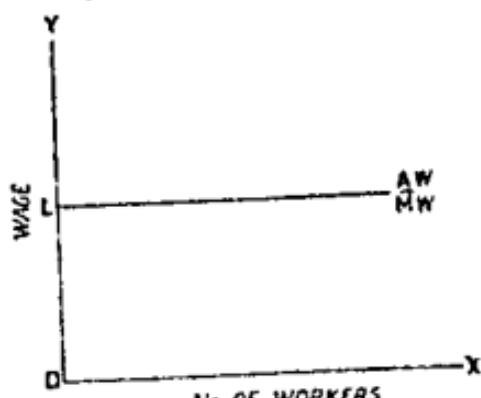


Fig. 19.3

*Imperfect labour market.* The position will be different when competition in the labour market is imperfect. If an employer decides to employ more workers he will have to attract them by a higher rate of wages. This higher rate will have to be paid not only to the additional workers but also to those already employed. His wage schedules will be of the kind given below:

TABLE 19 b

No of Workers employed	Average Wage Rs	Total Wage Bill (Rs)	Marginal Wage (Rs)
1	5	5	5
2	4.5	11	1
3	4.0	18	6
4	3.5	27	13
5	3.0	45	-

Both average and marginal wages rise as the number of workers increases but marginal wage rises more rapidly. In the language of graphs, both marginal and average wage curves slope upwards to the right, the former lying above the latter.

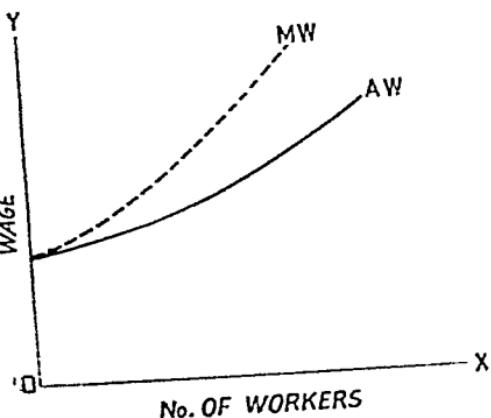


Fig. 19.4

#### EQUILIBRIUM EMPLOYMENT OF A FIRM

*The guiding principle.* Equilibrium employment of a firm refers to employment of such a number of workers that the producer has no inclination to increase or decrease their number.

One of our fundamental assumptions is that every producer endeavours to maximise his profit. In respect of employment of labour (or any other factor), this basic principle implies that the employer tries to maximise the difference between total cost and total return to him which results from the employment of workers.

*Equality of marginal wage and marginal product.* Wages represent the cost of workers and their net revenue product is the return on this cost. Difference between the wage bill and total net revenue product of labour will be maximum when marginal net revenue product equals the marginal wage. In Fig. 19.5,  $\bar{MP}$  is the marginal product curve and  $MW$  the marginal wage curve. When the number of workers employed is  $OM$ , marginal wage and marginal product, both, equal  $PM$ .  $QR$  represents the net revenue which the employer gets from the employment of workers. If he employs any additional workers, additional revenue due to them will be less than the corresponding addition to the wage bill. For instance, if the number of

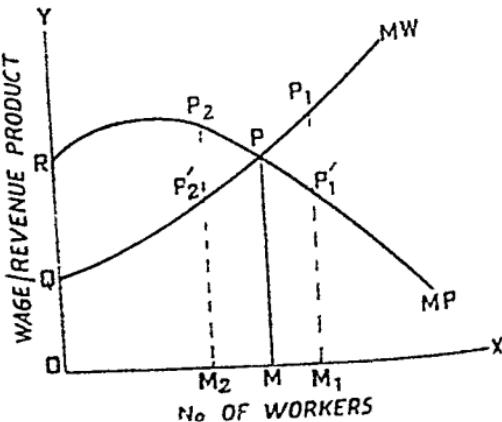


Fig. 19.5.

workers employed by him is  $OM$ , his net revenue from employment of labour will diminish by  $PP_1P_1'$ . Similarly, if the number of workers employed is less than  $OM$ , say  $OM_1$ , his net revenue earning will diminish by  $PP_2P_2'$ .

### Implications in perfect competition

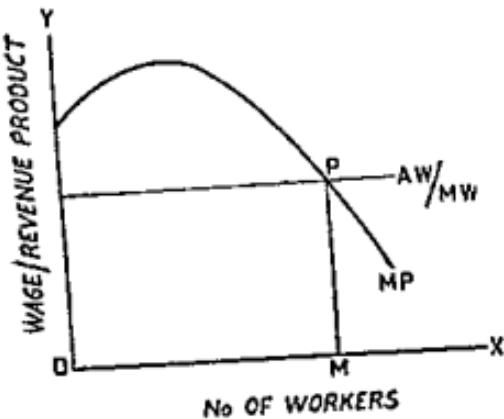


Fig 19-6

$\text{marginal product} = \text{marginal wage} = \text{average wage (PM)}$

*Intersection by marginal product curve from above.* Equilibrium employment of workers by a firm is, thus reached when marginal product equals marginal wage. In fact there is a second condition also which must be fulfilled. It is that the marginal product curve intersects the marginal wage curve from above. And, as the marginal wage curve either slopes upwards or runs parallel to the x axis, this can happen only when marginal product curve is sloping downwards at the point of equilibrium. In Fig 19-7 MW is the marginal wage curve and MP the marginal product curve.

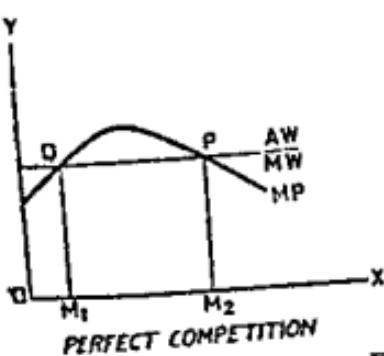
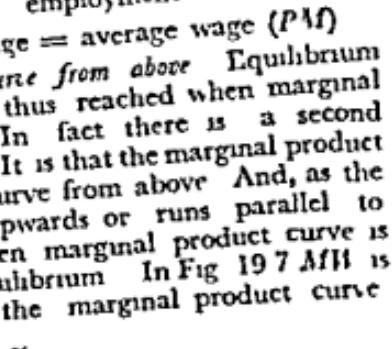


Fig 19-7

The two curves intersect at  $Q$ , as well as at  $P$ . At  $Q$ , MP intersects MW from below and at  $P$  it does so from above.  $Q$  is not a

When competition in the labour market is perfect, marginal and average wages are equal, whatever the number of workers employed. When marginal product is equal to marginal wage, it must also be equal to average wage.

In the diagram 19-6  $AW/MW$  is the wage line and  $MP$  is the marginal productive curve. When employment by the producer stands at  $OM$ , point of equilibrium is reached because with this employment



point of equilibrium. For, up to  $OM$  marginal product is less than marginal wage and there is a loss to the producer from employment.  $Q$  is the point of maximum revenue loss.  $P$  is the point of equilibrium.

This gives us the important conclusion that it is only in the falling portion of the marginal product curve of labour that equilibrium of employment by a firm can be established. It is thus only the falling portion of this curve which is the relevant portion for equilibrium analysis.

### EQUILIBRIUM EMPLOYMENT IN AN INDUSTRY

We know from our analysis of Chapter XV that an industry (with different producers having identical cost curves) is in equilibrium when in the case of every firm marginal cost equals marginal revenue and average cost equals average revenue. Let us see what form these conditions take in respect of employment of labour.

*Equilibrium employment by firms.* Analogous to the first condition that marginal cost equals marginal revenue, we here have the condition that marginal wage equals marginal (net revenue) product. When this is so in the case of every firm, no firm, as we have seen above, will have any tendency to increase or reduce the number of workers employed. How about the second condition?

*Equilibrium in the number of firms.* Suppose we are to calculate average product of a given number of workers. We shall take the total revenue which results from the sale of the output. From this we deduct payments which are due to the other factors which are used with labour. The balance is total revenue due to labour. This divided by the number of workers, gives the average (net revenue) product of labour.

At what rate do we assess the payments due to other factors? In the case of land and capital, market rates form the basis of calculating these payments. In the case of entrepreneurship, it is normal profit which is considered the payment due to it. Thus, in tracing the average product curve of labour, we allow for normal profit as the reward for the producer. If, then, in the case of every firm, average wage equals average product of labour, the industry will be earning normal profit. There will be no tendency for the number of firms to change. Number of workers employed will represent the equilibrium employment.

*Double equation with perfect competition.* Thus the two conditions for equilibrium employment are that for every firm marginal wage equals marginal product of labour and average wage equals average product. When competition is perfect, marginal wage and average wage are equal for all levels of employment. Hence the two conditions become one double condition: viz.,

$$\text{average product} = \text{marginal product} = \text{wage rate}.$$

## WAGES

with perfect competition in the

Position of equilibrium labour market is shown in the picture 19.8.  $MP$  and  $AP$  are the marginal and average product curves and  $AW/MW$  is the wage line.  $OM$  is the equilibrium employment of every firm because with this employment average product, marginal product and wage, all, equal  $PM$ . Obviously, this position is possible only when the wage line tangentially touches the average product curve at its highest point.

In equilibrium, therefore, average product of labour will be the highest. This is in keeping with our conclusion in Chapter XV that, in equilibrium with perfect competition, every firm is operating with lowest average cost.

*Two conditions with imperfect competition:* If competition in the labour market is imperfect, marginal and average wage curves do not coincide.

Conditions of equilibrium, therefore, are that marginal wage equals marginal product and average wage equals average product. Fig 19.9 shows equilibrium with imperfect competition in the labour market.  $MW$  and  $AW$  are marginal and average wage curves and  $MP$  and  $AP$  are the marginal and average product curves.

With employment  $OM$ , average wage and average product equal  $PM$  while marginal wage and marginal product equal  $QM$ .

In equilibrium the average product of labour is less than the maximum.

*The case of monopoly:* When there is only one producer in the industry, he is a monopolist (single seller) of the product and a monopsonist (single buyer) of labour. Any increase in employment by him, on the one hand, appreciably reduces the price of the product and, on the other, appreciably raises the rate of wages. His marginal and average product curves will rise less steeply and fall more steeply in their respective portions than they would under

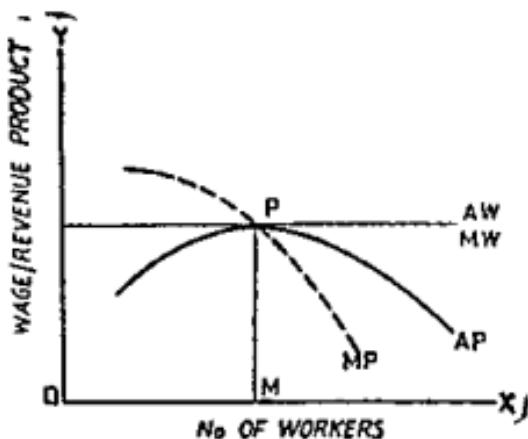


Fig 19.8

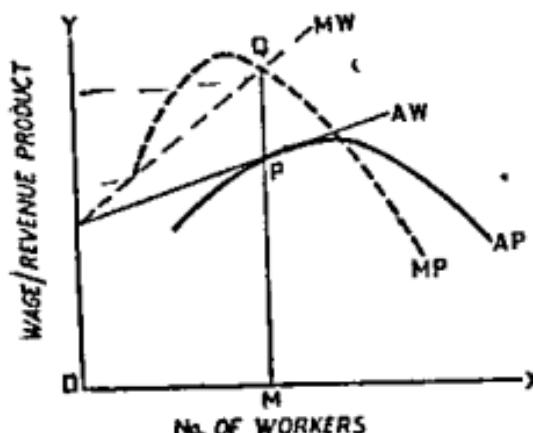


Fig 19.9

competition. Similarly, his wage curves also rise more steeply.

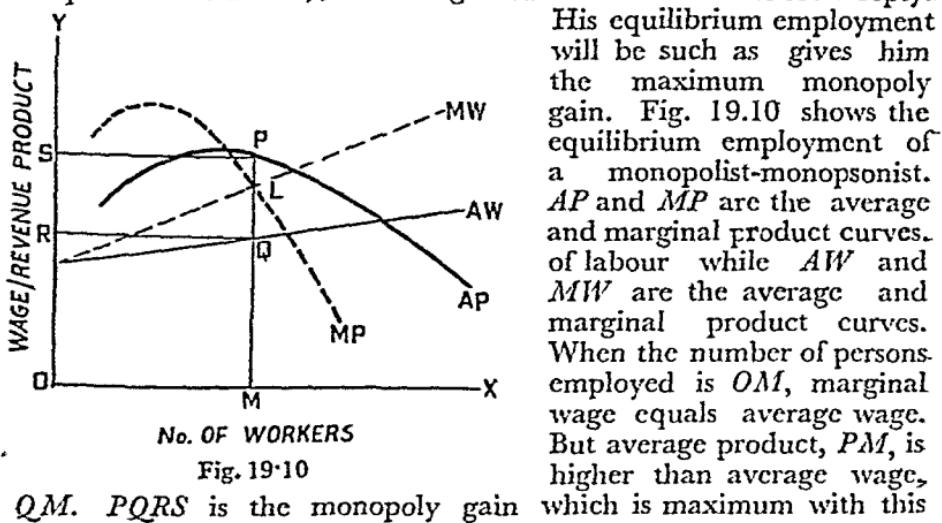


Fig. 19.10

$QM \cdot PQRS$  is the monopoly gain output.

#### DETERMINATION OF WAGE RATE IN AN INDUSTRY

*Assumption.* Wage rate is the price at which labour is bought and sold. It is, like every other price, determined by the interaction of forces of demand and supply. Actual working of the forces depends on the market forms. Let us assume conditions of perfect competition in the product and the labour market. Let us assume that labour is homogeneous and that it is specific, i.e., mobility of labour between the industry under consideration and other industries is nil.

*The demand curve.* In Fig. 19.11,  $MP$  is the marginal product curve of labour for an individual firm in the industry. The firm will employ such a number of workers that their marginal product equals the wage rate. When the wage rate equals  $PL$ , the number of workers is  $OL$ , and when the wage rate equals  $QN$ , he employs  $ON$  workers.  $MP$  is thus also the demand curve of the firm for labour.

We have seen that one condition for equilibrium employment of a firm is that the marginal product curve intersects the wage line from above. We concluded from this that it is only the falling portion of the marginal product curve which is relevant to equilibrium. Hence the demand curve of a firm for labour slopes downwards to the right over its relevant portion.

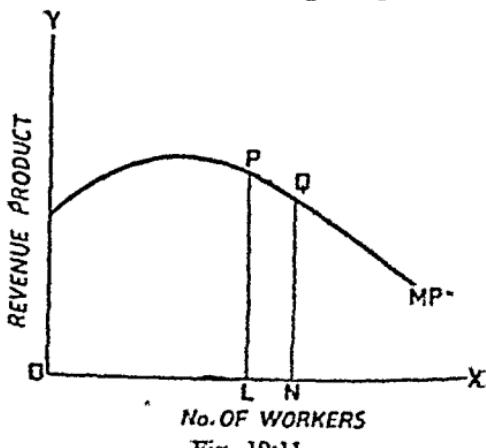


Fig. 19.11

Demand for labour in the industry comes from the producers and is the sum of the demands of individual firms. Industry's demand curve for labour is, therefore, obtained by the lateral summation of individual demands curves. As demand curves of all firms slope downwards, demand curve of the industry, as a whole, also slopes downwards.

*The supply curve* The question of supply of labour is rather ticklish. Supply of labour depends on the size and composition of the group of people from which labour for this industry is recruited (labour being specific). It also depends on the efficiency of the workers, and hours of work per day or, better still, working hours per year.

The effect of a rise in wages on numbers is uncertain. We have seen in Chapter XII that Malthus and his followers held the opinion that every increase in wages would lead to an increase in the number of workers so that wages will always tend towards the minimum level, which was just enough to provide the worker with existence. This they called the subsistence level of wages. Thus, the long run supply curve of labour was taken as parallel to the x axis at a height represented by subsistence level. The matter, however, is too complex. Many moral factors and social tendencies are involved in the picture. Rise in wages may lead to a rise in the standard of living, and may not result in an increase in numbers. Still, we might conclude that a rise in wages is likely to increase numbers in many cases though it may not be as much as brings wages back to subsistence level.

If a rise in wages leads to a rise in the standard of living, efficiency will be favourably affected. A higher standard of living for workers, especially in a country like India, means that more necessities and comforts become available to the worker which will make him more healthy and happy. Positive relation between efficiency and wages is widely recognized.<sup>5</sup>

The effect of wages on the length of working hours is also uncertain.

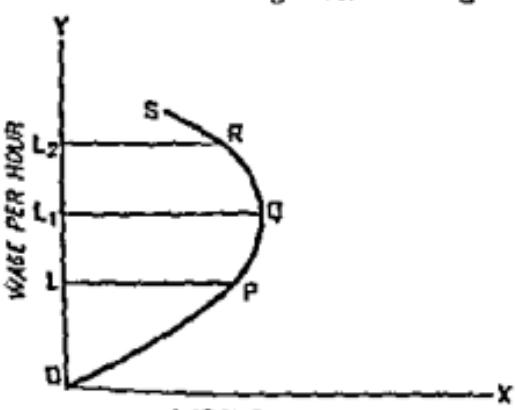


Fig. 19.12

Work after a limit is no pleasure and is thought of as giving disutility. A worker will work such a number of hours that earning of the marginal hour equals disutility of work in that hour. Marginal disutility of work increases as the hours of work increase. Hence he would be prepared to work for longer hours only if he were offered higher wages per hour.<sup>6</sup> Hence the higher the wages, the larger the number of hours he will

5 Cf., however, Chapter VI.

6 If hours of work per day are fixed, we would then say that he would be prepared to work for more days in a year only when wage rate per day rises.

be prepared to work and *vice versa*. But, this conclusion is not unexceptionable. When wants of the workers are inelastic, a rise in wages per hour will lead to a reduction in the number of hours they will be prepared to work. And when wants are elastic, they require more time to enjoy the fruits of their earning. They want to see more theatrical shows and enjoy more picnics, etc., etc. All this requires that they have more leisure. While, therefore, they are happy to have higher earnings, they would also like to have more leisure, that is, work less hours. What generally, therefore, happens is that up to a level a rise in wages induces them to work more hours in a day (or days in a year), but beyond a point the number of hours they would work decreases as wages rise. Fig. 19.12 shows the position.  $OS$  is the supply curve of labour hours. As wage per hour rises from  $OL$  to  $OL_1$  supply of labour hours increases from  $LP$  to  $L_1Q$ . At  $Q$  the supply curve of labour hours is vertical and beyond it, it slopes back. If wage per hour is raised from  $OL_1$  to  $OL_2$ , supply of labour hours will diminish from  $L_1Q$  to  $L_2R$ .

It may, however, be noted that it is possible that as wage rate is raised, supply of labour increases even if supply of labour hours decreases. For, efficiency is apt to increase firstly because wages are higher and secondly because hours worked are less.

What is our over-all conclusion? A rise in wages will most probably increase efficiency. It is also likely to increase the number of workers though we cannot be certain of that. And up to a point it will induce the workers to work for more hours per day, or more days per year. If, therefore, we draw a typical supply curve, it will slope upwards to the right.

*Intersection of the two curves.* In Fig. 19.13,  $DD$  is the

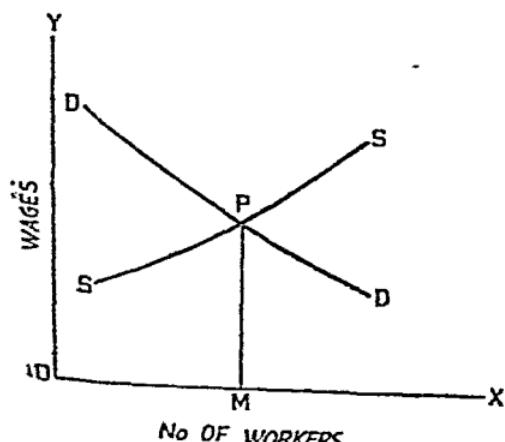


Fig. 19.13.

demand curve for labour. As explained above, it slopes downwards to the right.  $SS$  is the supply curve. The two curves intersect at  $P$ .  $PM$  will be the equilibrium rate of wages and  $OM$  will be the equilibrium employment of the industry.

*Circumstances in which suffering will be less.* There are, however, circumstances in which suffering caused is much less than imagined; it may be even negligible. In Fig. 19.14, we have two diagrams. Elasticity of the marginal product curve, in the relevant portion, is lower in diagram A than in diagram B. Unemployment caused in the former case is less. Hence the extent of unemployment depends on this elasticity. Elasticity of demand for labour depends on how far

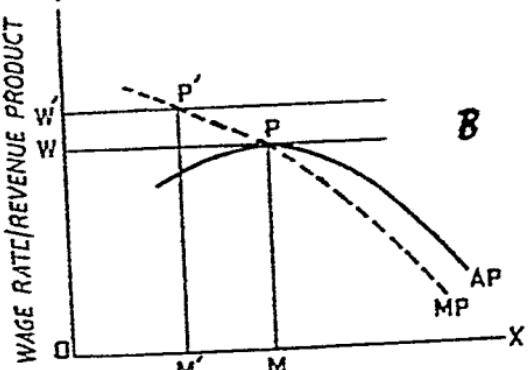


Fig. 19.14

other factors can replace labour, i.e., on the elasticity of substitution of other factors for labour. Existence of costly specialised machinery might make it difficult to reduce the number of labourers though in the long run such machinery will tend to be replaced so that less attendants are required.

As the employers find themselves compelled to pay the higher wage, they may attempt to pass the burden on to the consumers by raising the price. If the demand for the product at and near the prevailing price is less elastic, a rise in price will not much reduce the amount demanded. But a rise in price of the product means that the marginal net revenue product curve of labour shifts up and there may be no or little unemployment caused. In Fig. 19.16, as the price of the product is raised,

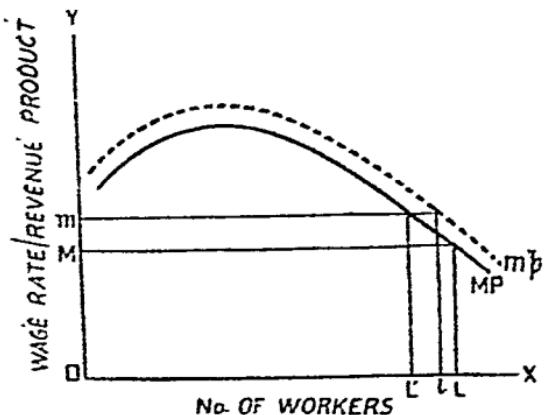


Fig. 19.16

marginal productivity curve shifts from  $MP$  to  $mp$ . Rise in wages is from  $OM$  to  $Om$ . Hence unemployment caused will be only  $Ll$ , and not  $LL'$  which it would have been if there had occurred no change in the price of the product.

Another possibility is that the producers attempt to pay the other factors less. To the extent that the supply of other factors is inelastic, the other factors will accept the lower rates. This means that payments to quantities used of other factors will fall and hence marginal product of every amount of labour will increase. Once again, marginal product curve will shift up and little unemployment may be caused.

A third possibility is that a rise in the wage rate raises the efficiency of the workers. Productive power of each worker having increased, the marginal product curve will shift to an upper position, and in the new position of equilibrium the number of workers employed may not be less or may not be much less than before. In the light of the views expressed by Professor Pigou, which we have reproduced in Chapter VI, increase in efficiency is very likely to follow upon the rise in wages.

Intensity of the suffering of those who are thrown out of employment may be reduced by the existence of unemployment benefit. If this benefit is not much less than the wage rate which prevailed before the minimum wage rate was fixed, the unemployed do not suffer much loss and those who remain in employment get a substantial gain.

### RELATIVE RATE OF WAGES<sup>8</sup>

Wages in a competitive industry equal the marginal (net revenue) product of labour. Suppose marginal product of labour in two industries is unequal. Wage rates in these two industries will also be unequal. There will then be an inducement for the workers to move from the industry where wages are low to the industry in which they are high. Such movements should remove the differences between wages in different industries. Why is it then that wages continue to be different in different occupations? We shall study this question in three steps.

1. *Short period difference.* Horizontal mobility of labour is low in the short period. In such a period it is not possible for majors to become ironsmiths or for teachers to become lawyers. Many jobs require that some knowledge and training are acquired and acquisition of knowledge and training takes time. Thus, if earnings of lawyers are higher than those of teachers on account of different demand and supply conditions, the difference will continue for some time. More of the younger, who have to make a choice of the professions they would enter, will now choose to be lawyers and less to be teachers. As the number of former increases and of the latter falls, earnings of the engineers will fall and of the surgeons will rise till they are equal. In the meanwhile the difference continues to exist.

2. *Long period effect of factor.* As we have pointed out above, differences in wages in different occupations should vanish if sufficient time is allowed for adjustment. And, in fact, these differences do disappear to a very large extent.<sup>9</sup> The differences of wages which we generally speak of are more apparent than real. In comparing earnings in two industries, we generally consider money wages only and forget to make allowance for other advantages and disadvantages according to scope of work in an industry. In comparing the earnings of two occupations, we should take account of real wages and the general wage. That is, we should compare all the cost to each

<sup>8</sup> In this discussion we assume and indicate our analysis to be theoretical.

demerits of employment in one industry with those of the other rather than comparing money payments only.

Work in some industries is disagreeable and a higher wage rate only will attract workers to such industries. The additional wages paid are to offset the disagreeableness. Some industries offer additional advantages in the form of free houses or liveries or facilities of cheap stores to their employees. In such cases workers may be prepared to work for lower money wages because they realise that the balance is being paid to them in the form of other concessions. In some industries like ship-building or construction of houses, employment comes by fits and starts so that there is no continuity of employment. There are industries in which workers have little scope for future success or few chances of any additional income. Some industries give provident fund and pension facilities while others do not. Then there are industries where there are high costs of the job. For instance, possession of costly tools or a good library may be essential. There are thus a large number of factors in respect of which employment in different industries is dissimilar. Workers in making a choice between two industries take into account all such factors in addition to money wage rates which obtain. When there is sufficient time for adjustment, real wages in different industries will tend to be equal. If they are different in any two industries, more workers will enter the industry where wage rate is high and less where it is low till the difference is bridged.

3. *Long period real differences.* The fact of the matter, however, is that even if we make allowance for all the factors mentioned above, that is, even if we compare real wages in the long run, we find that some differences continue to exist. How are we to explain these differences?

There are three possible explanations which can be given for such real and persisting differences when they exist. First, there are a large number of industries where a natural aptitude for the work to be done is necessary. For example, every one of us cannot be a good painter because painting requires, in addition to knowledge and training, an aptitude which is God-given gift and cannot be acquired. Similarly, to become an engineer, a person must have the power of grasp of mathematical methods. A musician may be able to increase his knowledge of the science of music but melody of voice is natural and cannot be acquired. If wages in occupations requiring natural aptitudes are high, they continue to remain high because it is not possible to adjust supply to demand.

A second factor is the large initial investment required for certain occupations. A lengthy costly course of education may be necessary for certain occupations. Thus, engineers and doctors invest large sums of money and long periods of their lives in acquiring the knowledge required for their jobs. It may so happen that in some of these occupations earnings are disproportionately high even if we make allowance for their initial investments of time and money.

And, yet, it may be that their earnings cannot be brought down by competition because there are not many persons who can command or afford the initial investment

Lastly, it may be that entry in some industries is restricted by law or by guilds. Entry for the new entrants may be made conditional upon passing some tests which are very severe and to which not many can prove equal. Or, a long period of apprenticeship may be made necessary and the number of apprentices allowed to an employer may be restricted. Restrictions of all these types exist in India in the way of entry into the class of chartered accountants.

### CLASSICAL VIEW OF UNEMPLOYMENT

Marginal productivity and wages must be equal in every industry. Now, suppose wage rate in one industry rises. There may be either of two reasons for it. It may be that demand for the product of the industry has increased. To produce more, labour has to be attracted from other industries and this is done by raising the rate of wages. A new adjustment of distribution of labour among various industries becomes necessary which comes about in due course of time.

The cause of rise in wages may be the result of fixing a minimum wage by, say, a trade union. Number of workers employed in this industry will diminish. There is no compensating demand for labour in other industries to absorb those who are thrown out of employment. The unemployed, unless they decide to remain unemployed, may ultimately shift to other industries and accept lower wages. Or, they may break the bonds of their union and accept lower wages in the same industry.

On the basis of the above argument, classical writers concluded that in the long run, wage rate must be such that all workers are employed. There is thus no scope for involuntary unemployment, except that some unemployment may result from friction in the way of mobility of labour. Shifts from one industry to others may take some time. Even the making of decision to break the bonds of the union may take some time. It is during this time that the workers remain unemployed. Thus, even if there is depression in the industry, workers thrown out from that industry will be accommodated in other industries, in due course of time.

Thus, general glut and general unemployment are considered impossible. But experience of the last one hundred and fifty years shows that existence of unemployment not only in individual industries, but in almost all industries at a time, is not only possible but a frequent phenomenon. Marginal productivity theory may explain the level of employment in individual industries, but there must be some other determinant of aggregate level of employment in the economy. We postpone the study of micro-economic aspect of employment to Chapter XXX.

## CHAPTER XX

### INTEREST

#### MEANING OF INTEREST

The main question to be answered in this chapter is : how is the rate of interest determined. Answer to this question is very closely linked with the meaning in which we use the term interest. It also depends on our notion regarding its nature. We first take up the question of its meaning.

*Interest is payment for the use of money loans.* Marshall throughout his "Principles of Economics" speaks of interest with reference to capital. He defines it as "the anticipated net earnings from new investments of free capital"<sup>1</sup> Two implications of this definition are rather difficult to accept. Capital includes all wealth used for productive purposes. Hire of furniture and other similar payments have to be treated as interest because such payments are made for the use of capital. However, we pay interest on borrowed money and not on hired furniture. The second implication is of a more fundamental nature. A borrower at the time of repayment of loan pays more than he receives at the time of borrowing. In day-to-day parlance this additional payment is called interest. Now, a person may borrow for purposes of production or consumption. Marshall would apply the term interest to payment for the use of production loans only. Here it is the general use which is correct. If the number of borrowers in the market increases, they exert a pressure on the market as a result of which rate of interest is likely to rise. This happens irrespective of the fact whether the new borrowers require loans for purposes of production or consumption. The appearance of a new consumption borrower exerts not only a similar but the same influence on the market as a new production borrower. In the analysis of forces which determine interest, distinction between production and consumption borrowers is, therefore, meaningless. Interest is the payment made for the use of money loans, whether they are consumption loans or production loans.

*Gross and net interest.* In another respect, general use of the term interest is rather confounding. Additional payment made by borrower to a lender is not for the use of money loan only. It includes payments in respect of some other items as well and is, therefore, better called gross interest. It includes, in addition to pure or real interest, payment for the risk that loaned money may not be returned at all. A government can borrow cheaper than a businessman and an average businessman cheaper than an artisan. This is because risk of non-payment is different in different cases. Hence payment

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<sup>1</sup> P. 539.

on this account differs from loan to loan. Some borrowers come to the lender to return the amount borrowed. There are others whose door the lender must knock a number of times before he can recover the sum advanced. The latter has to pay something for this inconvenience. Lastly, loans may be borrowed and repaid in convenient or inconvenient instalments. In the latter case the lender has to keep lengthy, both some accounts for which he must be paid. Gross interest less the payments for risk and inconvenience involved, is net interest or interest proper. In a perfect market where borrowers and lenders have a complete knowledge of what is happening in different parts of it, rate of net interest must be the same in all parts. Our analysis of determination of rate of interest applies to net interest.

Rate of interest charged also depends upon the period of the loan. Long term rate of interest is higher than short term rate. Some people try to explain the difference between the two by saying that a borrower pays a higher rate for a long term loan because he is saved the botheration of finding a lender again and again. But it can be argued on the other side that a long term loan saves the lender also the botheration of finding a borrower after every short interval. The real explanation of the difference between the two rates lies in the difference of risk involved. The longer the period, the more the uncertainties and hence the greater the risk of the borrower going bankrupt. Net rate of interest is the same whether the period is long or short.

### *1. NATURE OF INTEREST*

There are some economists who hold that saving is a function of the rate of interest and attribute charging of interest to time preference. In this category we may place Bohm-Bawerk, Marshall and Fisher. On the other hand, Keynes treats saving as a function of income and explains interest in terms of liquidity preference.

*Why rate of interest is positive.* We have seen that people save for making provision for their family, for themselves, and for earning in income. Problem with some of those who save for themselves and their family may be how to keep the amount saved in safe custody. Such people may be prepared to pay something for this "safety" and this payment would be negative interest. There are others who would be prepared to lend at zero interest. But if negative or zero rate of interest money loans demanded would in this world highly exceed their supply. Hence borrowers have to approach those who would not lend without a positive interest. And when interest is paid to some, even those who would otherwise lend at no interest or negative interest, have to be paid the current rate.

*Interest as the price of waiting.* The question is why most of the borrowers must be paid interest to be induced to save. Marshall considers interest as the reward for waiting. Saving represents the excess of income over expenditure. When a man earns and does no

spend, saving comes into existence. Saving, therefore, involves postponement of enjoyment of income; it involves waiting for consumption. Those who demand interest do so because they claim to be rewarded for this waiting.

Waiting, as used by Marshall, implies exchange of future satisfactions for present satisfactions. Lenders do this and claim an excess of future satisfactions as compared with present satisfactions foregone. The question then boils down to this: why are present satisfactions preferred to future satisfactions? That interest is the price of waiting thus turns out to be a question of why people have time preference, or, why they place a premium on present goods as compared with future goods.

One explanation of time preference is uncertainty about the future. One is not sure if loan will be repaid. Setting this aside as an element of risk which we have already disentangled from interest, there is yet what Bohm-Bawerk has called the 'perspective underestimate' of the future. We have a myopic vision, as it were, regarding the future requirements. Present requirements are somehow more real, they are more clearly perceived, and their urgency very much felt. Secondly, most people somehow feel that they will be better off in future than at present. That is, not only will the future requirements be not as pressing as they are to-day, income will also be higher. They, therefore, feel that they will be less in need of money in future than they are today.<sup>2</sup>

The rate of interest which will induce a person to save is proportional to the rate of his time preference. The rate of time preference differs from person to person. Persons who do not have a clear vision of their future, those who must spend much by habit or lack of self-control, those who think they will die soon, and those who are not much interested in their kith and kin, have a high rate of time preference. Such persons must be promised a high rate of interest if they are to save. On the other hand, people who are far-sighted, or who can control their expenses, or who have sufficient consideration for their family and dependents, have a low time preference.

*Interest as the price of parting with liquidity.* Keynes points out that in respect of time preference, a person has to make two decisions. First, how much of his income he would spend and how much he would save. The second decision to be made is in what form he would keep his saving (past as well as current.) Those who consider interest as a reward for waiting attribute it only to the first constituent of time preference. In fact it is attributable to the second. An individual generally keeps a part of his saving in the form of cash and the balance in the form of loans and capital assets, i.e., bonds and

<sup>2</sup> Bohm-Bawerk adds a third explanation, viz., technical superiority of present goods over future goods which means technical superiority of round-about methods of production.

equities. That part of saving which he keeps in the form of cash can at any moment be converted into goods immediately. Cash is a liquid which can flow into any use at any time with perfect ease and certainty. On the other hand, how far bonds and equities can at any time be converted into immediate command over goods and services depends on the market conditions at that time.

Interest is not a reward for saving. Those who hoard their savings, that is, who save but do not lend, do not earn any interest. But they do save. When a person parts with cash in exchange for bonds and equities, he gives up liquid command over goods to secure an illiquid asset. The extent to which he prefers cash to bonds and securities is his liquidity preference. If he lends his cash, he claims interest for agreeing to surrender his liquidity. Hence, by its very definition, interest is the payment for parting with liquidity for a specified period. It is thus the reward, not of waiting, but of not hoarding.

### CLASSICAL THEORY OF INTEREST

Interest is paid for the use of capital. It is the price of waiting. It is, therefore, determined by interaction in the market of the forces of "demand for waiting", on the one hand, and the forces of "supply of waiting," on the other. Demand for waiting comes from those who invest while saving constitutes its supply.

*Investment demand curve.* All uses of capital are not equally productive. It is possible to arrange them in a descending order of productivity. If the amount of capital is small, its use is restricted to those purposes where its productivity is high. As its amount increases, additional instalments of it are put to less productive uses. In other words, marginal productivity of capital diminishes as more of it is employed. Every producer employs such an amount of capital that its marginal product equals the market rate of interest. It evidently means that at a higher rate of interest producers use less of capital and vice versa. Hence investment demand curve of capital slopes downwards to the right.

*The supply curve of savings.* Saving depends on security, level of incomes, standard of living, foresight of the people and the like. At any given time these factors can be taken as given. A very important determinant of the amount of saving is the rate of interest. There are some people whose saving is little affected by changes in the rate of interests. There are also those who desire to ensure a fixed income from their saving and who, therefore, will save less at a higher rate of interest and save more at a lower rate. Yet in the case of many, interest serves as an incentive to save. Such people will be induced to save more at a higher rate of interest than at a lower rate. On balance, the saving curve, i.e., supply curve of capital, slopes upwards.

3 Marshall, Cassel, Walras, Knight and Pigou—all subscribe to this theory.

*Equality of saving and investment.* In any market, rate of interest settles at the point at which aggregate demand for capital equals aggregate supply. At the point of equilibrium saving and investment are equal.

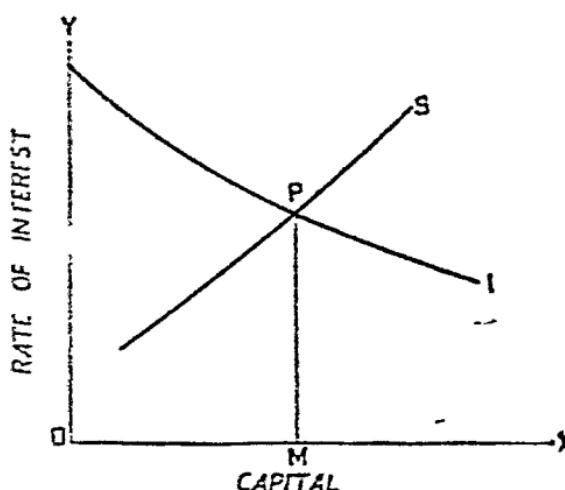


Fig. 20.1.

marginal instalment of saving. This marginal productivity will be equal to the rate of interest as well as to the minimum return which the marginal lender expects. At any other rate, there will be a disequilibrium.

#### NEO-CLASSICAL THEORY OF INTEREST

*Supply of and demand for money loans.* This theory goes by the name of loanable fund theory because it defines interest as the payment made for the use of money loans. There are in the market, on the one hand, lenders who supply money loans. On the other hand, there are borrowers who demand money loans. Rate of interest will be such as brings supply and demand into equilibrium.

*The supply curve.* There are two sources of supply of money loans. One exists in the general saving public. In accordance with his time preference, every individual has his individual supply schedule of loans. Summing up the individual supply schedules, we arrive at the supply schedule of money loans for the saving public. Now those who have high time preference will not save at a low rate of interest. As the rate of interest rises, more and more join the ranks of savers and those, who were already saving, save more. The supply of loanable funds is thus interest-elastic. The higher the rate of interest, the larger is the supply of loans and vice versa.

Banking system is also a supplier of money loans. Every bank has to make a decision regarding the extent to which it will make use of its capacity to lend. If it lends more, it earns more. If, on the other hand, the bank lends less, it strengthens its liquidity, i.e., its position to meet the demands made on it. Interest is the price of liquidity. When rate of interest is high, the reward for parting with liquidity is high and hence they will be prepared to lend more. At a lower rate of interest they will lend less.

In the above diagram I is the investment demand curve while S is the supply curve of savings. PM is the rate of interest which equilibrates the two. Marginal productivity of capital will be just a sufficient inducement to bring into existence the required

Supply schedule of money loans of the market is a composite of supply schedules of lending public and the banks. The supply schedules of both of them slope upwards and hence the market supply schedule slopes upwards. There are some lenders who are prepared to lend even when the rate of interest is negative. Some lend when the rate rises to zero. As the rate of interest rises further the supply goes on increasing. The supply curve of money loans therefore, starts from below the x axis and then rises above sloping upwards to the right.

*The demand curve.* Demand for money loans comes from two groups of people—consumption borrowers and production borrowers. A person borrows for consumption either because he considers his present wants to be more urgent than some of the wants which are expected to rise in the future, or because he expects his income to increase in future while he does not expect his wants to increase proportionately. In either case he has some wants to satisfy today for which he thinks he will be able to spare money at a future date. His problem, therefore, is to convert his money in future into money at present and he is prepared to pay interest for the solution of this problem. The lender does this job for him and gets interest. Obviously, the rate of interest, he is prepared to pay depends on the extent of his preference of his money at present to money in future. In the case of some persons this preference is greater than in the case of others. Also in the case of an individual this preference is higher for some wants than for others. If the rate of interest is high, some will not borrow while others will borrow less. As the rate of interest falls, existing borrowers borrow more and some new borrowers also enter the market. Law of demand is thus applicable to consumption loans.

Law of demand holds good in the case of production loans also. There are always a number of schemes open to the producers. Some of them are expected to prove more lucrative than others. As the rate of interest falls, many schemes which stood rejected at the higher rate, are carried out at the new rate. At a higher rate of interest more schemes are foregone.

*Intersection of demand and supply curves.* Thus we find that the demand curve for money loans slopes downwards to the right while the supply curve slopes upwards. As

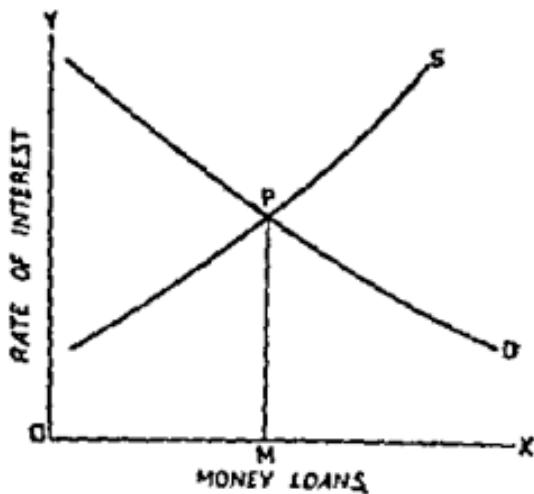


Fig 20-2

it is the function of the rate of interest to equalise demand for money loans with supply of them, the point of intersection of the two curves represents the position of equilibrium. In the diagram 20·2,  $PM$  is the rate of interest at which supply of, as well as demand for money loans, is equal to  $OM$ .

### KEYNES' THEORY OF INTEREST

*Motives for holding cash.* There are two factors which together determine the rate of interest. One is the quantity of money. The other is people's desire is to hold cash, i.e., liquidity preference. The amount of cash which people desire to hold is not a fixed amount. It is *primarily* a function of the rate of interest.<sup>4</sup> Variations in the rate of interest are accompanied by changes in liquidity preference. Liquidity preference is, therefore, a schedule showing different quantities of cash which people would at any given time like to hold at various rates of interest. Keynes mentions three motives for holding cash:

1. *Transaction motive.* Everybody must keep some money with him for the transaction of his current business. This current business may relate to personal or business transactions. These transactions are of more or less a regular nature.

2. *Precautionary Motive.* Some cash may also be kept to meet unforeseen contingencies. Such contingencies may arise in respect of personal requirements as well as business dealings. Preference to keep, for this purpose, non-interest yielding cash rather than purchasing an interest yielding debt is due to two reasons. The contingent need may arise before maturity of the debt. Then it has got to be discounted, and there may be no organised market for this purpose. The second reason lies in the uncertainty about the future rate of interest. When the need for cash arises, rate of discount may be high and the loss may be great.

3. *Speculative motive.* At any given time there must be a number of people, small or large, who think that the rate of interest in the immediate future will rise. They hold their resources in cash with a view to profiting from such a change.

*Determinants of liquidity preference.* Obviously, both in the case of precautionary as well as the speculative motive, preference to keep cash arises from uncertainties about what will be the rate of interest in future. For, if we could be certain what rate of interest would prevail in the near future, rate of interest today would adjust itself accordingly.

It would make discussion easier if we bracket liquidity preference due to transaction motive and precautionary motive together

<sup>4</sup> The word "primarily" is advisedly used. As shall be shown presently, liquidity preference on some accounts depends merely on the level of income. The statement is, however, in the spirit of Keynesian approach.

and call it  $L_1$  and call liquidity preference due to speculative motive  $L_2$ . The primary determinant of  $L_1$  is the level of income. With a rise in incomes,  $L_1$  will increase and vice versa. Changes in the rate of interest do not have any direct influence on it (unless) such changes are violent. Such changes may, however, indirectly influence it by influencing the level of incomes but that is only to a very limited extent. Hence  $L_1$  is not very sensitive to changes in the rate of interest. In technical language,  $L_1$  function is interest-inelastic at moderate rates of interest.

$L_2$ , on the other hand, is primarily a function of the rate of interest. How much cash a person would keep for speculative purposes, depends on the actual rate of interest and his expectation of what the rate is going to be in future. The higher the rate which he expects to prevail in future, the larger the amount of cash he would keep. His preference for cash also depends on absolute level of actual rate of interest. When he keeps cash and does not lend, he foregoes interest. Rate of interest is thus the 'price' of holding cash. When this 'price' is high, people will keep less cash and vice versa. Hence  $L_2$  function is interest-elastic. Interest-elasticity of this function is the most important fact in this theory, because it is the speculative motive which is primarily responsible for hoarding.

*Determination of rate of interest* Summing up  $L_1$  and  $L_2$  functions

we get aggregate liquidity preference schedule. Call it  $L$ . The amount of total cash which people want to keep is a function of the rate of interest, i.e., the price of holding cash. This "price" must be such that the amount of cash which people desire to hold equals the total quantity of cash available. If the rate of interest is lower, people would desire to hold more cash than the available quantity of it.

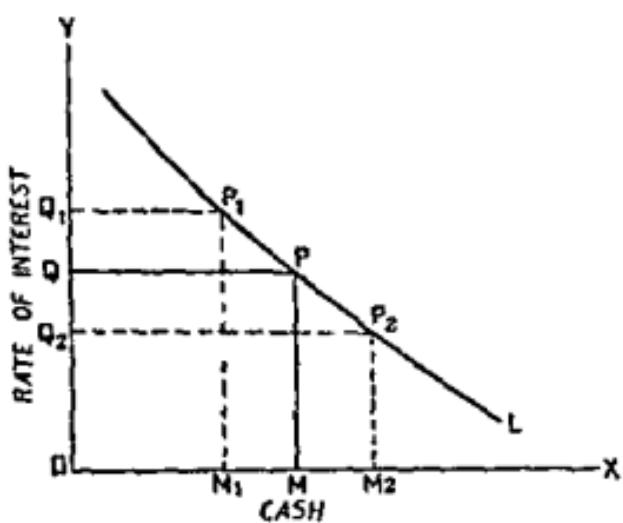


Fig 20.3

In other words, there would be more borrowers than lenders and the rate would rise. Similarly at a higher rate of interest there will be no equilibrium.

In the above diagram,  $L$  is the liquidity preference curve. If the quantity of money is  $OM$ , the equilibrium rate of interest will be  $P$  or  $OQ$ . For, this is the rate of interest at which the amount of cash which people desire to hold is just equal to the actual quantity of it. There will be no equilibrium if the rate of

interest is, say,  $OQ_1$  or  $OQ_2$ . At the former rate cash available ( $OM_1$ ) will exceed the cash demanded ( $OM_2$ ) while in the latter case it will fall short of the amount demanded ( $OM_2$ ).

### RELATIVE POSITION OF THE THREE THEORIES

*Correspondence in classical and neo-classical theories.* If we carefully compare the classical and the neo-classical theories of interest, we find that in essence they speak of the same thing. Those who subscribe to loanable fund theory—Robertson and some Swedish economists—take into account consumption loans in addition to production loans. If no new money is created by the banks and idle funds are neither increased nor disbanded, savings and loanable fund will be the same thing. These savings will supply both the consumption as well as production loans. Now, those who borrow for purposes of consumption spend in excess of their incomes. In other words, they dissave to the extent of their loans. If this dissaving is deducted from aggregate saving, we get net saving. Rate of interest will be such as will equilise net saving with investment. Thus just like the classical theory, the neo-classical theory, in its substance, tells us that at the equilibrium rate of interest saving equals investment.

This conclusion is in no way altered if we introduce bank loans and activated idle balances into the picture. Robertson defines saving as income of the "preceding period" minus expenditure out of it in the "current period." Hence his saving is disposable income less expenditure on consumption. Pigou, after Keynes, has defined saving as the excess of money income over expenditure on consumption goods. Incomes arise out of expenditure. Sources of expenditure are disposable income, bank loans, and activated idle balances. Out of these three items, a part is spent on consumption goods and the balance is saving, as defined by Pigou.

Loanable Fund consists of saving out of disposable income, bank loans, and activated idle balances. All these equal aggregate loans, consumption as well as production. Pigou would deduct from loanable fund the amounts spent on consumption goods and the balance is investment.

Hence the only difference between the two theories is that the neo-classical theory puts dissaving by consumption borrowers on the demand side and saving to match it on the side of supply, while the classical theory ignores both.<sup>5</sup>

5 Let,       $P$ =Disposable income,  
                  $E$ =Expenditure out of disposable income on consumption goods.  
                  $B$ =Bank loans.  
                  $A$ =Activated idle balances.  
 Then,       $S_r$  (Saving in Robertsonian sense)= $P-E$ .  
 and,       $L_o$  (Loanable Fund)= $S_r + B + A$ .  
 Now, let       $S_1, S_2, S_3$ , be production loans, and  
                    $C_1, C_2, C_3$ , be consumption loan out of  
                    $S_r, B$ , and  $A$  respectively.

*Keynes' criticism of the classical theory* Keynes attacked the classical theory of interest on many fronts. First, it treats interest as the price of not spending though it is really the price of not hoarding. Secondly, it completely ignores an important factor, i.e., the quantity of money which is a determinant of interest beyond doubt. But he himself agrees that saving always equals investment and that the rate of interest plays a part in bringing about this equality. Hence while the rate of interest does equilibrate cash demanded with cash available, it also does equilibrate investment and saving.

The chief point of criticism which Keynes raised against the classical theory was that the theory does not bring into the picture the real level of income. It is the level of income which is the primary determinant of the position of the saving function. Rate of interest is determined at the point where the investment demand function intersects the saving function. But where the saving curve will lie depends on the level of income. As the level of income rises, saving curve will shift to the right.

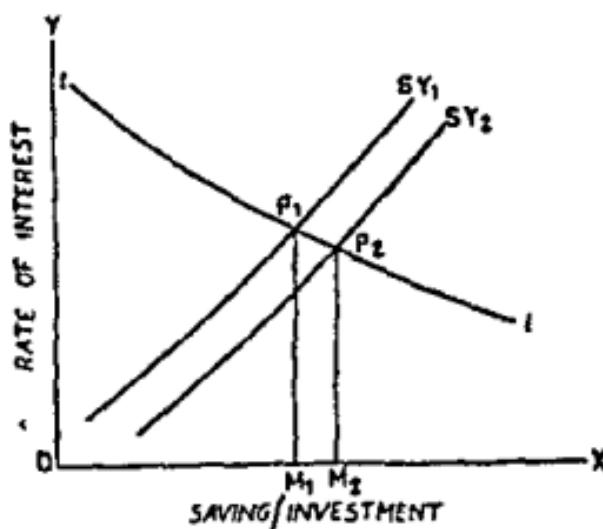


Fig 20-4

In the above figure,  $I$  is the investment function.  $SY_1$  is the saving function when income is  $Y_1$  and  $SY_2$ , the saving function when the income is  $Y_2$ . Rate of interest will be  $P_1M_1$  in the first case and  $P_2M_2$  in the second case. Thus we cannot know the rate of interest unless we first know the level of income. On the other hand, when the rate of interest falls, investment increases, and as a result of it income rises. Level of income thus depends on the rate of interest. We cannot know the level of income unless we know the rate of interest. The position is thus indeterminate.

Then,  $S_p$  (Saving in the Pigovian sense) =  $s_1 + s_2 + s_3$

Classical theory translated into these symbols tells us that,

$$s_1 + s_2 + e_3 = S = \text{Investment}$$

Neo-classical theory on the other hand says that,

$$(s_1 + s_2 + s_3) + (c_1 + c_2 + c_3) = \text{Loanable Fund} \\ = \text{Production loans} + \text{Consumption loans} \\ = \text{Investment} + \text{Consumption loans}$$

∴ Since,  $c_1 + c_2 + c_3 = \text{Consumption loans}$   
therefore,  $s_1 + s_2 + s_3 = \text{Investment}$

*Critique of Keynes' liquidity preference theory.* Unfortunately, however, this very point of criticism applies to Keynes' theory with equal force. He himself tells us that the amount of cash required for satisfying transaction and precautionary motives depends mainly on the level of income. When the level of income rises, liquidity preference on these two accounts (or  $L_1$ ) and hence aggregate liquidity preference (our  $L$ ) increases. This means that the aggregate liquidity preference curve shifts to the right with an increase in incomes and to the left with a fall.

In the above diagram  $LY_1$  is the liquidity preference curve when the level of income is  $I_1$  and  $LY_2$  is the same with income  $I_2$ .  $OM$  is the quantity of money. With level of income at  $I_1$ , rate of interest is  $P_1M$  and if the level of income is  $I_2$ , rate of interest is  $P_2M$ . Hence rate of interest cannot be known if the level of income is not known. And level of income cannot be known unless we know the rate of interest because the rate of interest determines the level of income through its influence on investment. The position is once again indeterminate.

#### MODERN THEORY OF INTEREST—A SYNTHESIS

*Four determinants of rate of interest.* A key to the problem can be found by a synthesis of the classical and Keynesian theories. There are four determinants of the rate of interest, viz., the saving function, the investment demand function, the liquidity preference function, and the quantity of money. Classical theory is correct in holding that

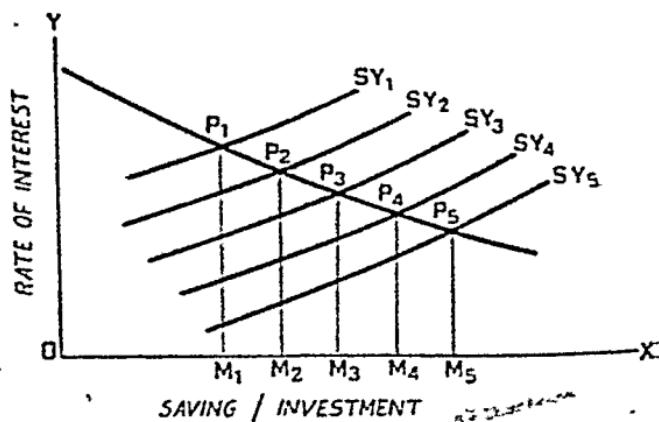


Fig. 20.6.

the rate of interest equalises saving and investment. Keynes is right when he tells us that it brings demand for cash to the level of actual cash. A full picture emerges when both these facts are brought together.

*The IS curve* Let  $Y_1, Y_2, Y_3, Y_4, Y_5$ , respectively represent the levels of income, say, Rs 500 crores, Rs 1,000 crores, Rs 1,500 crores, Rs 2,000 crores and Rs 2,500 crores (Fig. 20.6). And let savings curves at these different levels of income be  $SY_1, SY_2, SY_3, SY_4, SY_5$ . II is the investment curve.

At the level of income  $Y_1$ , equilibrium between saving and investment will be established at the rate of interest  $P_1M_1$ , each of them being equal to  $OM_1$ . When income is  $Y_2$ , such rate of interest will be  $P_2M_2$  and saving as well as investment  $OM_2$ . Similarly with other levels of income. If we draw a curve relating various levels of income to the corresponding rates of interest, we get an *IS* curve (Fig. 20.7).

Higher levels of income imply larger savings and hence lower rates of interest. In other words, *IS* curve will slope downwards.

to the right. Obviously the position of the curve would change if the saving curves and investment curve were different.

*The LM curve* Now, let liquidity preference curves at different levels of income be  $LY_1, LY_2, LY_3, LY_4, LY_5$ , and let the actual supply of cash be  $OM$  (Fig. 20.8).

At the level of income  $Y_1$ , rate of interest which equals demand for cash with actual cash is  $Q_1M$ . If income were  $Y_2$ , such rate of interest would be  $Q_2M$ .  $Q_3M, Q_4M, Q_5M$  are such equilibrium rates of interest for incomes  $Y_3, Y_4, Y_5$  respectively. Curve correlating income and rate

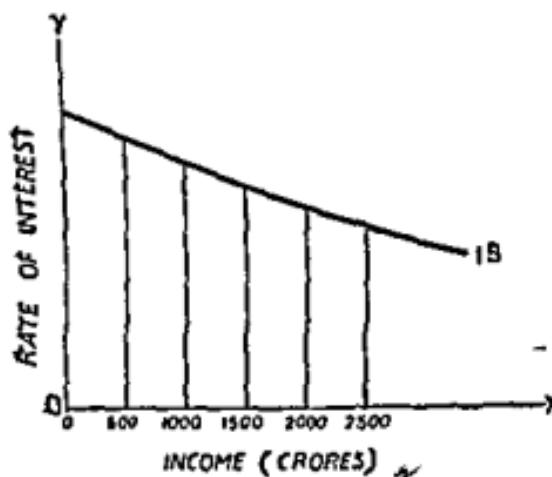


Fig. 20.7

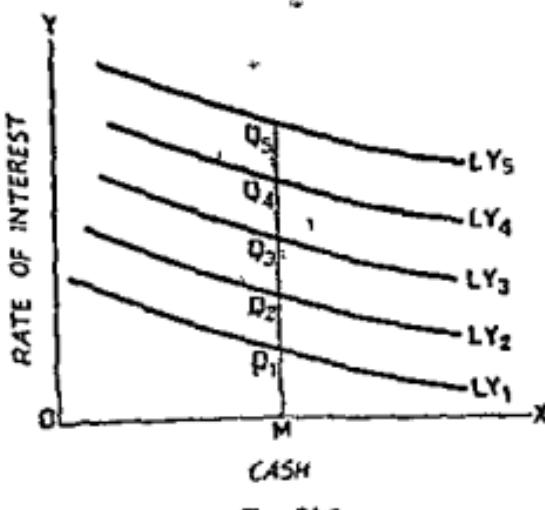


Fig. 20.8

of interest on this basis is  $LM$  curve. This curve tells us how the rate of interest will vary with changes in income, given the quantity of money and the family of liquidity preference curves.

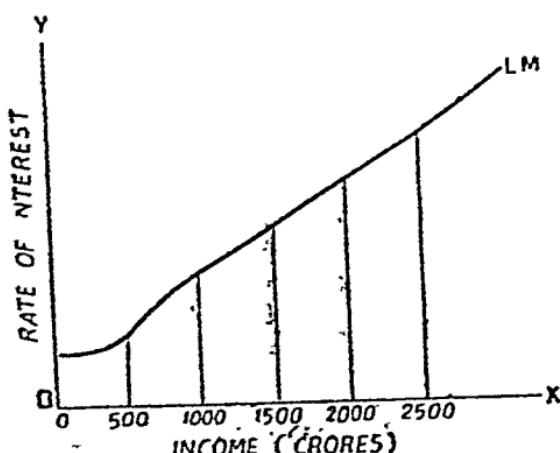


Fig. 20.9.

An  $LM$  curve slopes upwards to the right. For, as the level of income rises, liquidity preference increases, and hence, the rate of interest is higher and vice versa.

*Determination of interest.* Now, neither the  $IS$  curve, nor the  $LM$  curve, by itself tells us what rate of interest will prevail. It is the interaction of the two curves which represents the position of equilibrium. This is shown in Fig. 20.10.

When the rate of interest is  $ON$ , on the one hand, saving and investment are equal, and, on the other, desired and actual quantities of cash are in equilibrium. Moreover,  $OB$  is the level of income which goes with this rate. At no other rate of interest can there be equilibrium. For instance, if the rate of interest is  $ON_1$ , saving will equal investment with an income-level  $OB_1$ , and actual cash will equal desired cash if the level of income is  $OB_2$ . At either of these two levels of income, one of the two sets of forces will be in disequilibrium. And we cannot have two levels of income at the same time.

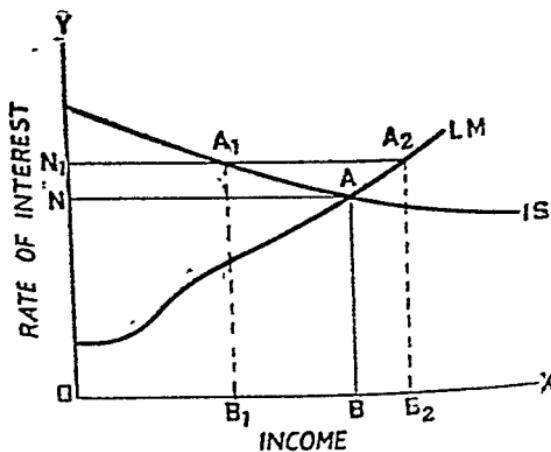


Fig. 20.10.

## CHAPTER XXI

### DETERMINATION OF RENT

To start with we may define rent as the payment made for the use of land. A more scientific definition will be evolved as we proceed. Essentials of the so-called modern theory of rent can be clearly understood by comparison with the theory of rent advanced by David Ricardo. We, therefore, first bring out salient features of his theory.

#### RICARDIAN THEORY OF RENT

*Rent arises because nature is niggardly.* Ricardo defined rent as "that portion of the produce of the earth which is paid to the landlord for the use of the original and indestructible powers of the soil." Before him Physiocrats had argued that in agriculture man is helped by nature and a surplus above costs is produced. This surplus according to them is rent. Ricardo contended that rent arises not because nature is liberal but because she is niggardly, not because she does much for us but because she has not given us good land in abundance.

*Rent with extensive margin.* Quality of a piece of land depends upon its fertility as well as situation. Considering these two factors, we find that in every country different pieces of land are of different quality. In every old country to meet the demand fully, superiormost quality of land is not enough. Inferior qualities have to be cultivated simultaneously with superior qualities. The inferiormost quality of land under cultivation at any time is called marginal land. Qualities superior to it may be called intra marginal lands. Price in the market must be such as equals the cost on the marginal land. It cannot be lower, otherwise marginal land would go out of cultivation. It cannot be higher either, because of competition. Cultivators of intra marginal qualities produce at lower costs but they sell at the same price in the market. Thus every intra marginal land earns a surplus. This is rent. The amount of rent earned by a piece of land depends on the extent of its superiority over the marginal land. In the case of a new settlement many best quality pieces are available. Yet their number is, after all, limited. With an increase in population, resort to inferior lands becomes unavoidable and rent arises on superior qualities.

*Rent with alternative courses.* It is of course possible to avoid the cultivation of inferior lands but that does not in any way improve things. One alternative is intensive cultivation. Returns from

pieces of land, already under cultivation, can be increased by applying more labour and capital on them. But these additional doses of labour and capital will yield diminishing returns, i.e., marginal product of these doses will decline. In this case we shall have marginal doses of labour and capital instead of marginal units of land. In other words, there will be an intensive margin instead of an extensive margin of cultivation. The marginal doses will just cover its cost while the intra-marginal doses will earn rent. The other alternative is to cultivate best soils of distant lands. In this case cost of transporting output of distant lands to the market will be high. There will be a differential advantage earned by nearer lands. Nearest land under cultivation will be the marginal land and intra-marginal lands will earn rent.

*Graphic representation.* As a matter of fact, as population increases,

cultivation is carried further both extensively as well as intensively, so that both, extensive as well as intensive, margins exist side by side. This can be shown by curve representation.

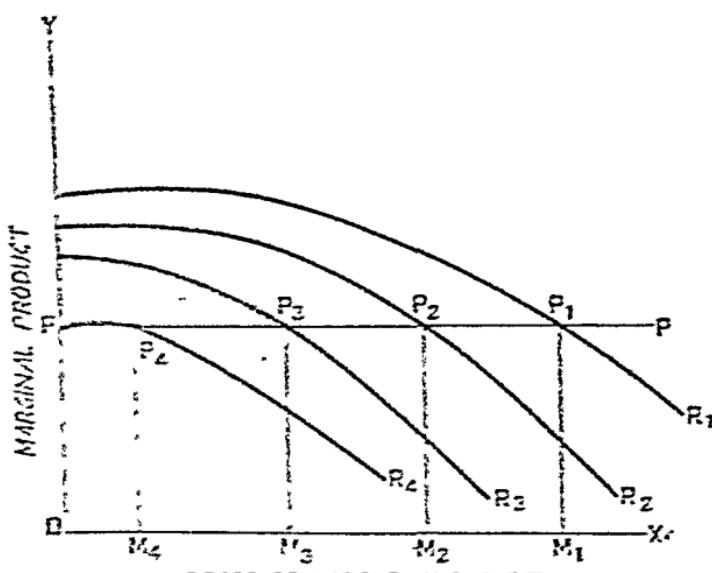


Fig. 21-1

Let A, B, C, D, be the four grades of land in descending order of quality: (Fig. 21-1) R<sub>1</sub>, R<sub>2</sub>, R<sub>3</sub>, R<sub>4</sub> are the marginal

net revenue product curves of doses of labour and capital on these grades respectively.<sup>1</sup> PP is the price per dose of labour and capital.

Every farmer will go on applying more and more doses of labour and capital on his land till marginal net revenue product equals the price of the marginal dose. Thus O M<sub>1</sub> doses are employed on A grade land, O M<sub>2</sub> on B grade, O M<sub>3</sub> on C grade and O M<sub>4</sub> on D grade. Sale proceeds of a marginal dose just cover the cost. This is the intensive margin existing in every grade of land under cultivation.

<sup>1</sup> Marginal net revenue product is the price at the market rate of output to the marginal doses when competition is perfect.

On D grade land, first dose of labour and capital proves the marginal dose. This dose just covers its cost. Hence D grade land does not earn any rent, it is the marginal land. This is the extensive margin.

Rent of a given grade of land is represented by the portion between its marginal (net) revenue product curve and the line PP. Thus rent of the C grade land is represented by the shaded area.

If population increases, price of the product will rise. Marginal revenue product curves will shift upwards. Extensive margin will disappear. Rents will then be measured from intensive margin upwards.

The cause of rent thus lies in the high price of agricultural product. But this high price is not to be attributed to larger demand. According to Ricardo, price rises because of the difficulty of producing corn under the most unfavourable circumstances.

### MODERN THEORY OF RENT

*Rent is the price of scarcity.* Ricardo commits the mistake of treating rent as a differential advantage of superior lands over inferior lands. He attributes it to differences in quality. Rent is, in fact, a price paid for the services of land. Like every other price, it is determined by the relation of its supply to demand, i.e., by its relative scarcity *vis-a-vis* the requirement of the population. There is no specific reason that, while all other prices are explained in terms of scarcity, this particular price should be explained in terms of differential advantage.

The fact of the matter is that it is scarcity, not differences in quality, which can explain the emergence of rent. Take the case of a new settlement where differences in quality exist. There will be no rent so long as land is abundant. Rent arises only when land becomes scarce. On the other hand, imagine a country where different pieces of land are of the same quality—inferior in fertility being well situated and superior in fertility being badly situated, so that advantages and disadvantages cancel out. If population is large and land scarce, land will command a price and its use will be priced. Thus rent arises when land is scarce and it does not arise when land is abundant, irrespective of the fact whether differences in quality exist or not.

Even the so-called differential rents can be explained in terms of scarcity. Rent earned by a piece of land of a given quality depends upon the degree of its scarcity. As population increases, land becomes more and more scarce. But the degree of scarcity is higher in the case of superior lands than in the case of inferior lands. It may even be that some inferior quality land is a free good while the best

quality land is commanding good rent. It will be so when inferior-quality land is abundant as compared with its demand but the best-quality land is very scarce as against the demand for it.

*Inelastic supply.* Rent is thus the price of scarcity of land just as payment made for any other commodity or service is the price of its scarcity. Land, however, differs from other goods and services in one fundamental respect. It is a free gift of nature. Man may develop or modify such a gift but he can neither create nor destroy it. Quantity of land is fixed. If earning of land rises very high, its quantity cannot be increased. If its earning falls to zero, it will not fly to the moon. Supply of land is not responsive to changes in price; it is inelastic. This is the distinguishing feature of rent. It is the earning of land, the quantity of which cannot be adjusted to changes in demand which reflect themselves in changes in price. We may now define rent. It is the earning of a factor of production the supply of which is inelastic. Viewed thus, application of the concept is not confined to earning of land only. If there is any other factor, the supply of which is inelastic under any circumstances, return to that factor in that circumstance partakes of the nature of rent. Three cases of inelasticity of supply of a factor deserve study.

1. *Land and Society.* Supply of a factor may be inelastic for all times and at all prices. Such is the case with supply of land to the Society. There are some commodities supply of which can be increased almost immediately as its demand increases and price rises. In the case of other commodities, adjustment of supply to demand takes some time. Land belongs to neither of these categories. Its supply cannot be adjusted to changes in demand for it, however long be the time allowed for such an adjustment. Also, its quantity available remains the same irrespective of the level of its earning. In other words, the supply curve of land runs parallel to the  $y$ -axis throughout its length. This is true whether the period under consideration be short or long. From the social point of view, the whole earning of land is, therefore, rent.

2. *Rent in a particular use.* Supply of a factor of production may be inelastic above a price. A case of this kind arises if we consider supply of land to a particular use. Suppose a piece of land is under wheat. Further suppose that if it were not used for wheat, it would be used for barley. Also, suppose that it could earn Rs. 200 a year when cultivated with barley. If under wheat it earns less than Rs. 200, it will be cultivated with barley. It will remain under wheat so long as its earning remains above Rs. 200. Rs. 200 is, therefore, the minimum which will attract it to wheat and is, therefore, its transfer earning in that use. For, as we know, transfer earning of a factor of production in a given use is the minimum of earning which will attract it into employment in that use. It can also be defined as the earning of the factor in its next best use.

Now, in this case the supply of the said land to its cultivation under wheat is elastic at an earning of Rs 200, because if its earning falls below that level, it would be shifted to barley. Above Rs 200 its supply to wheat is inelastic and, hence, its earning above that level is rent. Rent of land from the point of view of a particular use is, thus, the excess of its earning in that use over and above the minimum which will bring it under that use. It is the difference between the actual earning and transfer earning.

A piece of land may be absolutely specific to a single industry. There is then no alternative use where this land can be employed. Its transfer earning is, therefore, zero. The whole earning of such a piece of land is rent, not only from the standpoint of Society, but also from the point of view of that particular industry.

If specificity and gradation are completely absent, so that all pieces of land are alike and equally fitted for every use, there will be no surplus earning or rent in any particular use. For, a higher earning in any use will attract land from other uses to this use till earning in this use declines to the level of earning in other uses. But though rent from the point of view of any particular use will not exist, rent from the point of view of society will exist.

The position which obtains in the real world is that most pieces of land have a number of possible uses to which they can be put. Every piece is employed in its most profitable use. Difference between its earning in this use and in the next most profitable use is rent. Which is the most profitable use for a given piece of land, depends upon relative demands for and prices of various commodities which this piece can help to produce. For instance, suppose our given piece of land can produce four maunds of barley or three maunds of wheat and that market price of barley is Rs 12 and of wheat Rs 15 per maund. Barley would be grown on this piece. Its actual earning would be Rs 48 and transfer earning Rs 45, and surplus earning, i.e., rent under barley, would be Rs 3. Now further suppose that demand for wheat rises and consequently its price rises to Rs 18 per maund. The piece of land would be transferred to wheat, because in the new circumstances wheat is its most profitable use. In this use its earning will be Rs 54 and rent will be Rs 6.

Pieces of land employed in any particular industry at any given time are, as a rule, not of the same quality. Neither in this particular industry nor in alternative uses is their efficiency equal. Hence neither are their actual earnings in this industry equal nor their earnings in alternative uses. Rents earned by them are, therefore, unequal. The piece of land which earns least rent in this industry will be the first to leave it if the price of the product of the industry falls. Unit of land which earns the least rent in an industry and is at the margin of transference is the marginal unit.

Marginal unit of land in an industry is not necessarily the least efficient unit. It may be earning low rent in a use not necessarily because its actual earning is low but because its transfer earning is high. In fact, marginal unit may sometimes be the most efficient unit. Consider the following cases :—

TABLE 21-a

Situation	Land "A"			Land "B"		
	Actual earning (Rs.)	Transfer earning (Rs.)	Rent	Actual earning (Rs.)	Transfer earning (Rs.)	Rent
Case I	150	100	50	200	130	70
Case II	250	200	50	200	130	70
Case III	200	150	50	200	130	70

In case I, land A is less efficient than land B in both uses and its rent is lower. In case II, land A is more efficient than land B in both uses and yet its rent is lower. In case III, land A is equally efficient with land B in one use but more efficient in the next best use and its rent is less.

The definition of rent as representing the difference between actual earning and transfer earning is also applicable to the use of land from the social point of view. Here there are only two possibilities. Either land is used by society or it is left idle. The two possible "employments" are use and idleness. In the latter case earning of land is zero and, therefore, when used by society, transfer earning of land is zero. Hence the whole earning of land is rent from the social point of view. But from the point of view of any single use it is the excess of earning in that use over what it could earn in the next best use.

People with scarce natural talents may earn what may be called rent of ability. Melody of voice is a natural gift and cannot be produced at will. Not that the number of melodious singers does not increase or decrease, but that their number cannot be changed in response to changes in their earnings. If the demand for sweet music is high, their earnings would rise and vice versa. There is a transfer earning in their case. There is a level of income which these singers earn in occupations which do not require any skill. This is the

transfer earning. Difference between total earning and transfer earning of a singer is his economic rent and is properly described as rent of ability.

**3 Quasi rent** Supply of a factor may be inelastic for only some period. We have already noted that during the short period supply of fixed capital is inelastic. We have also seen that in the short period a producer continues to produce so long as price does not fall below prime costs. When his receipts just equal prime costs, he does not earn anything on fixed capital. In other words, the minimum earning, which would keep fixed capital in employment during the short period, is zero. If the price is above prime cost, fixed capital earns the excess which partakes of the nature of rent and has been called quasi rent. In general, quasi rent is the earning during the short period of a factor of production supply of which is inelastic during that period. In particular, quasi rent is the whole earning of fixed capital during the short period. In the long run

$$\begin{aligned} \text{Total receipts of the producer} &= (\text{Prime costs} + \text{Supplementary costs}) \\ &= \text{Profit} \end{aligned}$$

In the short period

$$\text{Total receipts of the producer} - \text{Prime cost} = \text{Prime Profit}$$

It is this prime profit which is called quasi rent.

Quasi rent may accrue not only to industrial plants but also to buildings and skilled labour. Supply of buildings may run short of demand and it will be some time before more houses can be constructed or old ones extended. During this time earnings of buildings will stand high. On the other hand, if somehow demand for buildings fell to zero, supply would remain intact during the short period. Hence during the short period the whole earning of buildings is rent.

The case of skilled labour is a little different. In the short period its supply cannot be increased. But supply of such labour will fall if their earning falls below a certain level—what it can earn in alternative occupations for unskilled work. This level is the transfer earning of skilled labour. Hence even in the short period the whole earning of skilled labour is not like rent. The excess of its actual earning over its transfer earning in the short period is quasi rent.

Whereas quasi rent partakes of the nature of rent, it is not completely akin to rent. Both are, of course, earnings of factors supplies of which do not respond to changes in price. But, while rent is the earning of a factor supply of which will never respond to such changes, changes in quasi rent ultimately do produce changes in the supply of the factor. If in an industry earnings of the plants are high for some time and demand promises to continue to remain high, more plants would be produced and the industry would expand. If, on the other hand, earnings of plants of a particular kind are below normal and demand is likely to remain low, their number would ultimately be reduced by not replacing the plants which wear out.

We can depict the position with the help of the following diagram:—

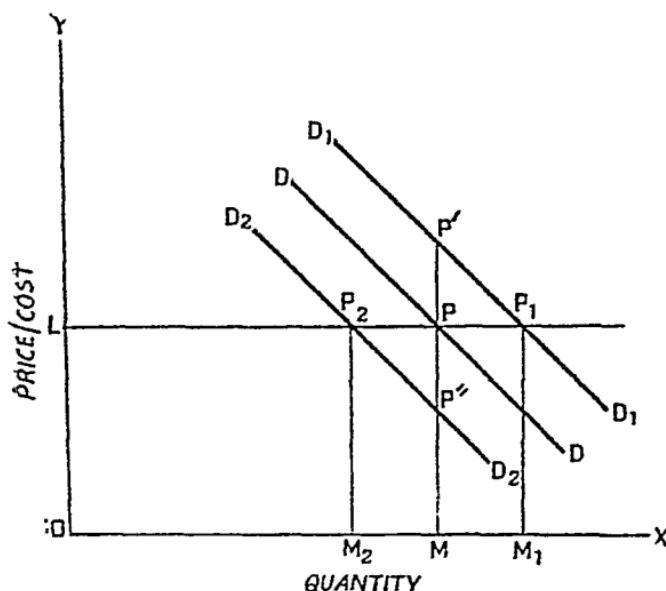


Fig. 21.2.

remain what it is even if the earning per plant falls to zero, the whole earning,  $PM$ , is rent. As demand rises, the demand curve shifts to the position  $D_1D_1$ . In the short period number of plants will remain the same and hence earning per plant will rise to  $P'M$ , i.e., the quasi-rent will rise. In the long run, however, more plants would be produced and the earning would fall to  $P_1M_1$  which is again equal to the cost of working the plant. There is no rent. Similarly when the demand curve falls to  $D_2D_2$ , quasi-rent in the short period falls to  $P''M$  but in the long run its earning equals its cost of production. Thus what is rent in the short period ceases to be so in the long run. This is why it is called "quasi-rent" rather than "rent."

### RENT IS PRODUCER'S SURPLUS

One inference which is drawn from the Ricardian theory is that rent is a surplus. Rents, which are earned by the intra-marginal qualities of land (or the intra-marginal doses of other factors), are not the result of any efforts on the part of their owners. They receive rents because marginal quality of land has to be simultaneously cultivated with them (or marginal dose of other factors has to be applied), and cost of cultivating it is higher than the cost of cultivating intra-marginal qualities. If population is small, best quality land does not yield any rent and still it is cultivated. Thus land is cultivated if it yields no rent. Rent is, therefore, producer's surplus. It is a earned reward which results from factors extraneous to efforts of owner or the cultivator of land. Consequently, if all rents were

Suppose plants can be produced at constant costs and the cost of working a plant in a period is  $OL$ . We start with a position where  $OM$  is the number of plants and  $DD$  their demand curve.  $PM$  will be the earning per plant. This equals cost of production (as spread over the life of the plant). But, as in the short period the supply of plants would

taxed by the government or remitted by the landlords, neither price of the produce nor size of the output would be affected.

Modern theory of rent leads to no different conclusion in this respect. Rent being the return to a factor the supply of which is inelastic, its supply would remain intact even if rent falls to zero. It is, therefore, a surplus earning. Whether rent would be high or low and whether there will be any rent at all or not, depends upon the extent of scarcity. Now, supply being given, scarcity is a function of demand which the producer himself is in no position to influence. Increases and decreases of demand are out of his control. If demand increases, his rent rises and if demand decreases, his rent falls. And the rent may very well fall to zero. All this time supply is unaffected. Hence rent is a surplus.

It may, however, be noted that it is rent, and not actual earning of a factor yielding rent, which may fall to zero without affecting the supply of the factor. In those cases where the factor under consideration has transfer earning above zero, supply of the factor would be affected if actual earning falls below transfer earning. Hence it is not the total earning, but its excess over transfer earning, which is a surplus.

#### RENT AND COST

Another important inference drawn by Ricardo from his theory of rent is that rent does not enter into cost. According to him rent is not a price-determining entity, it is price-determined. Price of corn is determined by its cost of production under the most unsavourable circumstances i.e., by the cost of the marginal land. And marginal land, by hypothesis, is no-rent land. Its cost, therefore, does not include rent. If rent is remitted or taxed, cost of the marginal land will remain unchanged and hence price will not be affected.

What has modern theory of rent to say regarding this question? The fundamental principle here is that transfer earning is the cost of using a piece of land (or any other factor) in a given manner. When land is used for wheat, its cost is the amount of the next best crop, say of barley, which could be raised on it and which has now to be foregone. Land from the point of view of social use has no transfer cost. Hence in assessing the cost of aggregate output of goods to Society in real terms, rent of land is not to be included. Land is a gift of nature to Society. If owners of land earn something for their possession, it is an unearned earning.

In any given use, land has a transfer cost. Whole earning of land in any given use is, therefore, not rent. Transfer cost has to be excluded from it. Transfer cost is included in the cost of the industry but rent cannot be included. In assessing the cost of an industry to Society, we take into account the alternative uses to which the factors employed in this industry could be put. Of course in this context the whole earning of land does not constitute cost. That part of the

earning, which is a surplus over transfer cost, cannot be included. Only transfer earning is a part of the cost of production of industry.

Various pieces of land employed in an industry do not have the same transfer cost. If all pieces of land are equally well suited for the industry under consideration, marginal land will be the highest-transfer-cost land included in the industry at the point of equilibrium. In other words, marginal land in the industry will not be the land of worst quality but the land which can bring the highest income in its next best use. Price must be high enough at least to cover transfer cost of this land. Other pieces of land which have lower transfer costs earn a surplus which is rent. From the point of an industry, therefore, the earning of land is neither wholly price-determining nor wholly price-determined. That part of its earning, which is transfer cost, is price-determining. The excess of earning over transfer cost is price-determined.

The approach of an individual producer is, however, different. He purchases the use of land for a price just as he purchases the use of any other factor for a price. If he uses his own land, he foregoes an income which he could earn by leasing it out. In either case he is as much concerned to cover this item from his sale proceeds as he is to cover any other item of expenditure. If his sale proceeds do not cover this item of expenditure, it is a loss as it would be in the case of any other item. To an individual producer, therefore, the whole-rent of land used by him is a part of the cost of production, whether he actually pays out any rent or himself owns the land.

#### CONDITIONS OF COMPETITIVE EQUILIBRIUM RECONSIDERED

In our discussion of competitive equilibrium in Chapter XV., we considered two cases, *viz.*, where cost curves of different firms are identical and where these curves are not identical. We are now in a position to further analyse the question of cost curves to find out which of these two cases is typical of real situation. We shall find that all depends on our assumption about rent. We set out the discussion in three stages.

1. *Rents of employed factors.* Differences in cost may be attributable either to some employed factor (or factors) or to the employing factor. Let us first take the case of an employed factor, say land. We will assume that all entrepreneurs are equally efficient for all industries and are available in perfectly elastic supply.

Suppose, that different areas (natural units) of land are unequally efficient, but an acre, which is more efficient for the industry in question, is also more efficient for all other industries. Then competition will adjust values of different acres to their efficiencies. Thus, those who employ more efficient acres will have to pay a correspondingly higher price. There will be no difference of costs on account of this circumstance.

Next suppose that different acres are equally efficient for this industry but unequally efficient for alternative industries. Those which are less efficient for the latter, will have low transfer costs and vice versa. When demand and price of the product stand low, entrepreneurs will produce less. They will, therefore, demand less of land &c, offer a low price. Only those pieces of land which have low transfer costs will enter this industry. When demand and price for the product rise, demand for land for this industry will increase and acres with higher transfer costs will have to be attracted by a higher price. Due to competition, price paid for all acres must be the same. Hence acres with lower transfer earnings will earn rents. These rents are surplus earnings for the owners of these acres but to the entrepreneurs they are costs. As all entrepreneurs have to pay the same price for land, their costs will be equal.

Now suppose different acres are heterogeneous for the industry under consideration and homogeneous for alternative industries. Transfer costs of all acres will be equal. When demand and price of the product is low entrepreneurs will employ those acres which have higher efficiency for this industry. As demand and price of the product rise they become prepared to employ less efficient acres for the same payment. Meanwhile, however, payment offered for more efficient acres will have risen due to competition for them. Once again, those who use more efficient acres have to pay a correspondingly higher price. Transfer earnings being equal, these acres will be earning rents, but for the producers, who employ them, these rents are costs.

Rents earned by employed factors are thus costs to the entrepreneurs and there is no reason why they should not be reckoned in tracing the cost curves. When we include rents in costs, different units of employed factors command a price in accordance with their relative efficiencies to this industry. There can, therefore, be no differences in costs of the firms on account of employed factors.

**2 Rent of entrepreneurship** The case of entrepreneurs can be analysed on the same lines. Entrepreneurs who are more efficient than others, for all industries, can earn a higher award everywhere. Hence their normal profits, which are a cost, are higher in proportion to the savings of costs which they, *qua entrepreneurs*, effect in respect of other factors. There is no difference in cost curves.

Entrepreneurs may be equally efficient for the industry in question and unequally efficient for alternative industries. Those, who are less efficient in alternative industries, have lower transfer costs. In this industry they earn equal profits with others but their profits contain an element of rent for them because their transfer earnings are low.

Entrepreneurs may be unequally efficient in this industry but equally efficient for alternative industries. Transfer costs will be

equal, but those who are more efficient in this industry will earn higher profits. The difference will be rent of entrepreneurship. Rent of an entrepreneur will be proportional to the excess of his efficiency in this industry.

*Conditions of equilibrium.* Two procedures are open to us. One is that we argue that rents earned by entrepreneurs are similar in nature to rents earned by employed factors. We include rents of employed factors in costs. Uniformity of treatment demands that we include rents earned by entrepreneurs also in costs. If we do this, all firms will have identical cost curves. Conditions for full equilibrium will be that in the case of every firm price equals marginal as well as average costs.

The other point of view is that rent of entrepreneurs is not cost but a surplus or supernormal profit. If we adopt this point of view, then cost curves of different firms will not be identical. Conditions for full equilibrium of the industry will be that price equals marginal cost of every firm but it equals average cost of the marginal firm only.

## CHAPTER XXII

### PROFIT

*Working definition of profit.* The term profit is difficult to define. As we shall presently see, opinions diverge widely in respect of meaning to be attached to this term. We may, however, start with a working definition. Total receipts of a producer less the explicit costs are his gross earning. If from the gross earning we deduct the implicit costs (rent and interest of land and capital subscribed by the producer) as well as the producers' wages for management, the balance is the differential gain or true profit. Profit may thus be defined as the excess of producers' receipts over his costs.

The determination of income earnings is one of those fields of economic study where economists differ widely. We have already noted the various view points regarding interest. In the field of profit, divergence of views is more well marked. We shall, therefore, study a number of theories of profit and in the end make a critical study of them.<sup>1</sup>

#### MARSHALL'S THEORY OF PROFIT

*His theory is one of a static state.* Marshall's theory of profit is one of a stationary state. He does not take into account dynamic changes like changes in population or inventions.<sup>2</sup> He is primarily concerned with the state of affairs in equilibrium. And the question of equilibrium pertains to a stationary state.

*Profit is the supply price of business power.* He describes profit as the price of the supply of business power in command of capital. There are three components of this business power —

- 1 The supply of capital
- 2 The supply of ability and energy for managing the business,
- 3 The supply of the organisational capacity by which the business ability and the requisite capital are brought together and made effective for production

For every branch of trade there is a rate of profit which is regarded as the normal rate. Assuming that there are no changes in methods, the normal rate of profit in a branch of trade is determined by traditions. In the long run rate of profit in every industry equals its normal rate of profit. It can neither be higher nor lower than the

1 In the statement and explanation of these theories we have tried to stick as much to the language of the authors of these theories as is admissible.

2 He does not pay into consideration of effect of invention. If an entrepreneur introduces invention, his profit increases. But, as knowledge about the invention spreads, profits come back to normal. It is interesting to note that in a single para Marshall forecasts Clark's theory though he soon forgets about it. *Principles Of Economics* (8th edition), pp. 597-8.

normal rate, because a lower rate will send many undertakings out of trade and a higher rate will attract new ones.

*Normal profit enters costs.* Normal rate of profit maintains the supply of business ability in equilibrium with the demand for it. When an individual decides to enter a branch of trade, the whole of the profit which he expects to earn from the venture, enters into his calculations. He decides to supply his business power if the expected reward is fair. Profit of the entrepreneur is thus the supply price of his business power, and is, therefore, one of the normal expenses of production. It is a part of the long period supply price of his product.

*Risk is not the main determinant.* The rate of normal profit is different for different branches of trade. These differences may be partly explained by the difficulties of management. For instance, when wage bill is proportionally high as compared with the expenses on account of new materials, tools, machinery, etc., more effort and anxiety are involved in organising and co-ordinating the work of labourers. The normal rate of profit will be higher. But the chief explanation of differences in normal rates of profit is found in differences of risks in different trades. Assessment of, and adjustment to, changes in prices are difficult and are a source of risk. The order of mind which can do this job well is rather rare. Hence industries with greater risk have a higher level of normal profit.

Risk is a positive evil; otherwise people would not pay premia to insurance companies for covering risks. If the risks cannot be insured against, they must be compensated for by the receipts from the business. But he does not agree with "some American writers" that profit is the reward of risk simply. In Marshall's scheme of things, risk does not explain the existence of profits; it is only one of the explanations of differences in normal rates of profit in different branches of trade.

*For economy as a whole only frictional profits are possible.* Thus there is no profit, in the sense of true profit, for the economy as a whole. Total product is exhausted when every factor is paid at the rate of its supply price. The supply price of enterprise—or, better still, of business power in command of capital—is normal profit which is covered by the price.

*Function of profits.* Frictional profits, which are possible according to Marshall's analysis, serve as a guide to production. Producers while making a choice from among different avenues of production are guided by the existence and the extent of frictional profits. This, then, is the function which Marshall would assign to profits.

### CLARK'S THEORY OF PROFIT

*Static and dynamic economies.* J. B. Clark defines profit as the  $\rightarrow$  of the price of goods over their cost. Distinction between a static and a dynamic economy is fundamental to his theory of profit.

In a static economy there is a possibility that profits arise from frictions, but above all they arise in a dynamic economy which is characterised by changes in standards.

Five changes are constantly in progress. These are

- 1 Population is increasing,
- 2 Capital is increasing,
- 3 Methods of production are improving
- 4 Forms of industrial establishments are changing so that the efficient producers survive while the inefficient ones are thrown out
- 5 The wants of the consumers are multiplying

*Frictional profits in static economy.* If these five changes were eliminated we would have a static economy in which prices of goods as well as wages and interest stand at their natural or normal level.<sup>4</sup> Natural price of a commodity is one which just covers the cost of production i.e., wages and interest at their natural rates. There is then no profit for the entrepreneur. He gets only wages for whatever labour he performs and interest on his own capital. If the price of a commodity stands above or below its natural level competition would bring it to that level. But competition does not work without let or hindrance. Hence if actual price is different from the natural price the difference might take some time to disappear and the entrepreneurs earn their frictional profits in the meanwhile.

*Profits result from dynamic changes.* Notwithstanding the possibility of frictional profits profits are the result exclusively of dynamic changes i.e., of the five generic changes enumerated above. These changes cause not only differences between the actual prices of goods and wages and interest at their natural rates but also change the natural rates of wages and interest themselves. In other words, the five changes produce variations as between the static standards, on the one hand, and also on the other, change the static standards themselves.

He illustrates his theory by a change of the third category, i.e., inventions. An invention increases production per head. Rates of wages and interest paid by those who have introduced the invention remain the same but their receipts go up. Hence they earn profits. In course of time the invention ceases to be a secret and comes to be widely known about and used. Then the fruits of the invention will have diffused themselves throughout the Society. The Society will have moved to a higher level of economic development. Natural rates of wages, interest and prices will have gone up. Also the capital accumulation will be at a higher rate. The circular flow of economy takes place at a higher level.

It is evident that if changes are not continuous, flow of profits will not be continuous. Once a change comes, some entrepreneurs earn profits for some time but it slips in time through their fingers.

and bestows itself on all members of the society".<sup>3</sup> The entrepreneurs grasp it but cannot hold it.

In real life, however, profits have a continuous existence because generic changes are constantly occurring so that adjustment is a continuous process. Actual wages are of course continuously moving upwards, but the standard or "natural" rate is also moving upwards so that the actual rate continues to lag behind the standard rate, the balance being profit.

*Profit and risk.* Profit of Clark's conception has nothing to do with risk. He realises that risk does give rise to a special type of income. But this income, according to him, accrues to the capitalist rather than to the entrepreneur. The entrepreneur is empty-handed. He who has nothing to lose, carries no risk. The onus of risk falls on the capitalist.<sup>4</sup>

### SCHUMPETER'S THEORY OF PROFIT

*Innovations and entrepreneurship.* Professor Joseph Schumpeter's theory of profit falls, in many respects, in the same category as Clark's.<sup>5</sup> He also attributes profits to dynamic changes, but in place of five "generic changes" of Clark he explains the emergence of profits in terms of changes in the productive process. He groups together all such changes under the heading "innovations". But Schumpeter's "innovations" have a much wider scope than Clark's changes in the methods of production. They include all those changes in the productive process the aim of which is to create a discrepancy between the existing price of a commodity and its new cost.

The entrepreneur's function is to combine factors of production for the productive process. Combining of factors is a special process, when they are combined for the first time. Once the business has begun to run its smooth course, combining of factors no longer exists as a problem. Of course when a change of one kind or the other is introduced in the productive process, a new combination becomes necessary and entrepreneurship again comes into action. Hence only carrying out of a new combination is enterprise and the individual who performs this function is the entrepreneur.

Profit is the reward for enterprise. It is a surplus over cost. If the gross earning of the entrepreneur are deducted wages for his labour and rent and interest, respectively, for his land and capital, any, the difference is the profit.

<sup>3</sup> J. B. Clark, *The Distribution Of Wealth*, p. 405.

<sup>4</sup> J. B. Clark, *Insurance And Profit*, *Quarterly Journal Of Economics*, Vol. VII, 0-54

<sup>5</sup> Schumpeter himself admits it. cf. *The Theory Of Economic Development*, 128 fn.

*Profits result from innovations* Under static conditions, i.e., under the circular flow of an economy, total receipts of a firm (unless it is a monopoly) just equal its costs. The producer is making neither any profit nor any loss. And this is easily understandable. The producer has no new combinations to introduce, he has no entrepreneurial functions to perform. He is there as a business manager. The entrepreneur does not exist. How could there be a reward for entrepreneurship under these circumstances?

When an innovation is introduced, profit comes into existence. Such an innovation may take the form of introduction of a new kind of machinery, enlargement of the size of business unit, exploitation of a new source of raw material, carrying supplies to an unexplored market, change in the quality or grade of the product, etc., etc. Whenever any such change is introduced, it calls for carrying out a new combination of factors. It brings enterprise into action which reduces the cost to below the prevailing price. Profit emerges. Then other firms, lured by the profit, also adopt the innovation till a reorganisation of industry occurs and a new equilibrium is established. Once again price equals cost and the profit disappears. The profit is thus realised for some time by those who introduced the innovation and then it disappears. The function of the entrepreneur is to carry out perpetual innovations. Such innovations continue pouring in and profits continue to arise, now here, then there, now as a result of this innovation and then as a result of another.

Profit accrues not to him who conceives the innovations, nor to him who finances it, but to him who introduces it. It is thus not the contribution of capital, but the will and action to carry out a new combination—that is, the entrepreneurial act—which is the source of profit. Nor is profit the reward for risk taking because the entrepreneur never takes any risk. Suppose he has borrowed money for investment. If his venture fails, it is the lender who suffers the loss. And if he has used his own capital, then he suffers the loss not as an entrepreneur, but as a capitalist.<sup>6</sup>

*Distinction from other earnings* When an entrepreneur introduces an innovation, say, supplying a new market or producing a new quality, he has no competitors. There is thus an element of monopoly revenue in his profit. If somehow he could retain the secret or enter into an association with new-comers, then profit becomes a permanent monopoly revenue. Yet, a permanent monopoly revenue is not profit. Once the firm is established, there is no entrepreneur and hence no profit. Profit is the value of monopoly, monopoly revenue is the return from monopoly condition. Profit is also different from other forms of income earnings. Rent, wages and interest are permanent branches of income, profit is not.

*Functions of profits* Clark and Schumpeter agree that profits increase when capital accumulation grows. Not only that

<sup>6</sup> It must be noted that in this respect also his views are similar to Clark's.

Both also agree that the pace of capital accumulation gets accelerated when profits are rising. Thus, in their scheme of things profits are both the cause and the effect of economic progress. The function of profits is to increase the rate of capital accumulation.

### KNIGHT'S THEORY OF PROFIT

*Three components of entrepreneur's income.* According to Professor Frank Knight, the income of an entrepreneur is constituted of three components. First, there is the contractual element for routine services of management performed by him. Second, he receives the return on property which includes rent on land and return on capital provided by him. The remainder is the differential element which is profit. The difference between the first two elements and the differential element is that while the former are imputed at competitive or market rates, the latter is a residual income.

*Insurable risk and uncertainty.* Fundamental to Knight's theory of profit is his distinction between predictable and unpredictable changes, i.e., between changes which can be foreseen a reasonable time in advance and those which cannot be. It is only the latter (i.e., uncertainty) which give rise to profits.

The word "risk" has been vaguely used by many writers. Risks are of two kinds, insurable and uninsurable. If the outcome of a circumstance can be predicted, there will be no risk at all of either kind. It may, however, be that while the outcome of a given circumstance cannot be predicted, the outcome of a group of such circumstances can be calculated, *a priori* or with the help of past statistics. Thus, we are not in a position to say whether a particular person will die or not in a given year, but we can, on the basis of past records and current facts, estimate fairly accurately how many persons will die in the country during a year. Similarly, we may be able to calculate in advance how many buildings will catch fire and how many road accidents will take place during a year. In other words, in some cases the possibility of an occurrence can be predicted with a fair degree of accuracy. When the probability of an occurrence is known, insurance becomes feasible and the risk of loss can be converted into a fixed cost, i.e., the insurance premium.

When situations are unique, it is not possible to categorise them into groups. Then it is opinion, not knowledge, which forms the basis of judgment. The risk is uninsurable and it takes the form of uncertainty.

*Profits result from uncertainty.* At the bottom of the uncertainty problem in Economics is the fact that entrepreneurs have to judge the course of future events. They have to contract for factors of production in advance at fixed rates. They realise upon their use and sale of product in the market after it is made. There is an interval which elapses between the contract with the suppliers of factors of production and the realisation of sale proceeds. Contract with the suppliers of factors is based upon anticipations. But during

the interval changes might take place which upset anticipations and a divergence arises between cost and selling price. The difference is profit, positive or negative. If the conditions which would prevail at the time of the sale of the product, could be predicted at the time of contracting for factors of production there would neither be any uncertainty nor any profit. Hence it is imperfect knowledge of the future, uncertainty about conditions of price and demand which is the true explanation of profit. In an absolutely unchanging society, there would be no uncertainty whatever. Prices would then be given fixed data for the entrepreneurs. Sizes of the outputs of various kinds of goods will have so adjusted themselves that the price of every commodity will equal cost. There will be no profit.

*Profits are not the result of progressive change but unpredictable change*

Now imagine a society in which there is no progressive change i.e., there is no change in population, no inventions etc., etc. In such a society there is a place for irregular and hence unpredictable fluctuations. The extent of uncertainty will depend on a number of factors. If the economy is agricultural, there will be a high degree of uncertainty because the outcome of agricultural operations is much harder to predict than the same of manufacturing operations. The more roundabout are the methods of production employed, the larger will be the interval between contract with factors and the sale of output. There will be more uncertainty. The extent of uncertainty also depends upon the character of wants. If life is simple and wants are few, their extent can more easily be predicted than when wants have multiplied. The primary function of competition is to equalise price and cost, so that there are no profits and also proceeds just cover payments for the factors (including wages, etc.) of the entrepreneur. But in actual society cost and price only tend to be equal. Unforeseen disturbances are always occurring so that perfect equilibrium is rare. Oscillations do not settle down to zero and profits (positive or negative) continue to occur.

Even in a society in which there are progressive changes profits will occur only if the changes are unpredictable. If the course of all dynamic changes could be predicted with accuracy, the effects of every change will be adequately provided against in advance. Costs connected with such effects will be so adjusted in time that they correspond to the prices which will prevail when the change occurs. There will be no divergence between costs and prices and there will be no profits. Dynamic changes will give rise to profits only if these changes or their consequences cannot be predicted. Hence not dynamic changes, not any change in fact, but uncertainty about their occurrence and effects, is the source of profits.

In a world of unpredictable changes every factor faces uncertainty. But by their contracts with the entrepreneurs they delegate all their uncertainty bearing to the entrepreneurs. This is why only the latter bear losses or earn profits while others get their rewards at stipulated rates.

*Function of profits.* It will be noted that in the scheme of things as presented by Knight, the function of profits is to serve as an incentive to production. Uncertainty is inherent in the act of production and the entrepreneurs would not enter the field of production unless they expect to be rewarded for uncertainty-bearing.

### A CRITICAL REVIEW OF THE THEORIES OF PROFITS

It must be clear by now that the various theories of profits are distinguishable from one another in respect of the answers which they provide to two important questions. First, what are the circumstances which give rise to profits, i.e., why do profits arise? Second, what is the role which profits are expected to perform in a Capitalist economy? It would be instructive to further X-ray these theories in the light of these questions.

*Marshall's Theory.* He tells us that the producer receives only normal earnings for the supply of business power in command of capital. Thus there are no profits in the sense of a differential gain. Business ability seeks the most profitable avenues. Competition brings down earnings of entrepreneurs in all branches of trade to the normal level. But a long period of time is needed for the full equilibrium of competitive forces, so that exceptional successes and failures are possible<sup>7</sup>. Thus he allows the existence of frictional profits. Apart from that there are only normal profits. Normal profits are the normal remuneration of co-ordination and superintendence; they are a part of cost and hence they are not a surplus. Marshall can, therefore, hardly be said to have any theory of profit at all.

He confuses the "rentier aspect" and the "waiting aspect" of capital. Reward for ownership of property, that is capital, is interest. This is the rentier aspect of capital. He would, therefore, have done better if he had attempted to associate profits with waiting because higher profits do lead to capital accumulation.

Realising that there are higher profits in some cases than in others, Marshall introduces his apologetics, the most important of which is the differences of risk in different branches of trade. As we have already pointed out, risk, in Marshall's theory, does not explain the emergence of profit, it only explains differences in normal profit. And normal profit is a cost of production. Moreover, when it is held that the producer chooses the most profitable trade, it is assumed that he possesses a perfect knowledge. And with perfect knowledge there is no risk to assume. "Risk is thus made an available and ascertainable datum"<sup>8</sup>. His risk is not risky.

<sup>7</sup> *Principles Of Economics* (8th Ed.), p. 619.

<sup>8</sup> Parimal Ray, On Marshall's Statics And Dynamics, *The Indian Journal of Economics*, April 1941, p. 768.

*Theories of Clark and Schumpeter* Clark and Schumpeter rule out the risk theory of profit on the plea that risk is borne by the suppliers of capital and not the entrepreneurs. They do not realise that uncertainty is borne by him who not only makes the decisions, but also bears the consequences of those decisions. If the capitalist decides to bear the risk, he is the entrepreneur, and the "entrepreneur" is really his manager. For, then it is the capitalist who makes the chief decision, viz., who will make the decisions for him. It is one thing to make decisions, it is another to be asked to make decisions. He who makes decisions is the entrepreneur, not the one to whom power of making decisions is delegated.

Knight is on very solid ground when he observes that dynamic changes can give rise to profits only if their consequences are unpredictable. As A.K. Dasgupta has pointed out, if the innovator is aware of the consequences of his action on cost and price of his product, then what he gets is simply a high value imputed to his superior ability.<sup>9</sup> High reward for superior ability cannot be called a net profit, it is wages for his management.

The conception of economic dynamics of Clark and Schumpeter is really one of comparative statics. Dynamics is continuous change. Their invention or innovation runs a course the end-product of which is a new equilibrium. Their dynamic surplus is, therefore, in fact a frictional surplus which disappears as the change giving rise to it spends itself out.

*Knight's Theory* Of all the theories studied here, Knight's appears to be a sound one. Uncertainty is a permanent feature in the economic system. This is so on account of two reasons. One is the paradox of equilibrium.<sup>10</sup> It takes the forces of equilibrium time to work themselves out. But if sufficiently long period is allowed for that purpose, external forces are apt to intervene and obstruct the operation of original forces. Uncertainty appears as a necessary factor. Secondly, equilibrium analysis has concerned itself only with what will be the position when forces have worked themselves out to rest. It does not tell us of the manner in which equilibrium is reached. Now, if equilibrium is of the swing round the pendulum variety, uncertainty enters as its basic feature.

*Conclusion* All the theories discussed here, including knight's theory, make a micro-economic approach to the question of profit. These theories tell us only why and under what circumstances individual producers may earn profits. None of these theories throw any light on the factors which determine the general level of

9 *The Conception Of Surplus In Theoretical Economics* p. 184

10 *Ibid* p. 186

profit in a community. They do not take into account the factors which the use of money gives rise to. So far as the demand for one good arises from a supply of the other, profits of one producer will be balanced by the losses of the other and there cannot be any general surplus. It is only when we take into account the part played by money, that we can arrive at a macro-economic theory of profits. We shall only then be in a position to explain the oft-observed phenomenon that general level of profit is sometimes continually rising over a period and sometimes it is continually falling. We propose to study macro-economic aspect of profits in the chapter on incomes and employment because it is with these questions that the general level of profit in the country is intimately connected.

## GENERAL CONSIDERATIONS REGARDING INCOME EARNINGS

### MARGINAL PRODUCTIVITY THEORY ✓

*Original version* Many economists have attempted to evolve a general theory of distribution in terms of which rates of earnings of all factors could be explained. These attempts have resulted in the formulation of marginal productivity theory. The use of its basic idea for the analysis of particular problems dates as far back as Ricardo, but as a general theory of distribution it was developed in the closing decades of the last century by three persons—Wicksteed, Walras and Clark—*independently of one another*. We give here Wicksteed's and Clark's treatment of it and then we shall give the modified version of the theory as given by Mrs Joan Robinson.

(a) *Wicksteed's treatment* Wicksteed's first statement of this theory appeared in a pamphlet "Co-ordination of the Laws of Distribution" (1890), wherein he employed complicated mathematical methods. His treatment of the theory in his "Commonsense of Political Economy" is simpler and is illustrated by arithmetical examples and geometrical diagrams<sup>1</sup>. He uses the phrase "marginal efficiency of a factor" instead of marginal productivity. It is defined as the "effect upon the product of a small increment of that factor, all others remaining the same". Factors are paid because they render a service, i.e., because they help to produce output. Their utility lies in their productivity. Just as the value of a commodity tends to equal its marginal utility, similarly the value of a factor tends to equal its marginal productivity. A "sensible employer" goes on hiring more men so long as the last one produces at least as much as his wage, and no more. Hence every factor will be employed up to the point where the additional product just covers the additional cost<sup>2</sup>.

In his graphic treatment he starts with a diagram which was then commonly being used to illustrate the emergence of rent (Fig 23.1). Along the x axis are shown increments of labour (which stands for labour and capital) applied to "a constant of land", and

1 Book II, Chapter VI

2 Mathematically if P is the total product when the amount used of one of the factors say, capital is K, then  $\frac{\Delta P}{\Delta K}$  is the marginal efficiency of capital, and  $K \times \frac{\Delta P}{\Delta K}$  is the share of capital in the total product.

—along the  $y$ -axis are shown increments of crop. When the number of labourers is  $Ox_1$ , total output is  $Ox_1w_1v$ . Labour is rewarded at the rate  $w_1x_1$  so that  $Ox_1w_1v$  represents the total wage bill. The balance  $w_1y_1v$  is rent. If labour used is less, say  $Ox_2$ , its marginal product is more, i.e.,  $w_2x_2$ . Labour gets more per unit. Rent is less, that is  $y_2vw_2$ . As a constant of land is used, rent per unit of land becomes less.

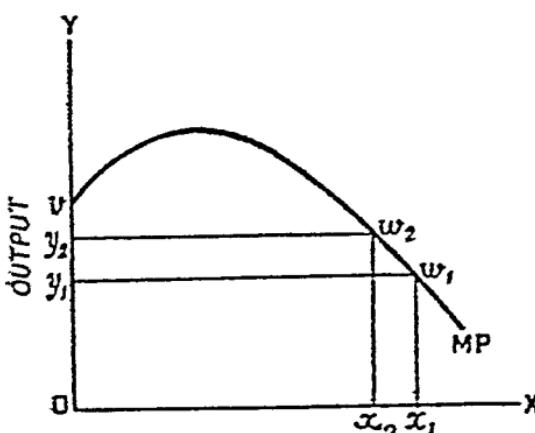


Fig. 23.1

In the above diagram, payment to labour is shown as a rectilinear area and the return to land is shown as a mixtilinear area. This would have any special appropriateness only if rent were a residual share in the product. In fact this is not so. Land earns its payment on the same principle as labour. More labour per unit of land means less land per unit of labour. If land gets less rent when labour is reduced from  $Ox_1$  to  $Ox_2$ , it is because land per unit of labour becomes more and its marginal productivity falls.

Number of labourers employed with a constant of land is fixed by the alternatives open to labour. Quite similarly, amount of land used with a constant of labour depends on alternatives open to land. Labour is devoted up to a limit where its marginal return equals the same in its alternative uses. The same also happens in the case of land. Thus, if we reverse the diagram given above and represent increments of land used with a constant of labour along  $x$ -axis, and the consequent increments of crop along  $y$ -axis, we get a similar curve as above. Return to land will then be represented by the rectilinear area and of the labour by mixtilinear area. Rectilinear area of this new diagram will be equal to the mixtilinear area of the above diagram and vice versa.<sup>3</sup> Hence mixtilinear area of the above diagram represents rent of land not because it is the residue but because it represents marginal efficiency of land.

(b) *Clark's treatment.* Clark's marginal productivity of a service is just the same as Wicksteed's marginal efficiency of a factor. It is measured by the effect on the total product when a unit addition or subtraction is made in the amount of the productive service in question. Keeping the amounts of other productive services constant. Under conditions of pure competition, equilibrium is achieved when the rate of return to each productive service equals its marginal product.

<sup>3</sup> Wicksteed proves it with the help of an arithmetical illustration.

For, if the rate of return to a service is less than its marginal product, competition among entrepreneurs will raise the rate. Nor can the rate be higher than the marginal product because of competition among the owners of the service.

Is it possible to use a larger quantity of one factor with fixed quantities of other factors? Clark's reply is in the affirmative. In the first place, he says, there is a flexibility in the amount of one productive service which can be combined with given quantities of other services. Agriculture is a very obvious example of such a possibility. The second, and the more important, fact is that in the long run fixed factors can be adjusted to the variable factor by a change in the form of the former. If, for instance labour increases and capital remains the same, such machines can be used that the same value of capital employs more men. Clark sees no limit to such rearrangements of resources.

*Modified version* Mrs. Robinson has attempted to restate the theory so that its applicability is widened. The theory as originally stated applies only to perfectly competitive market. Her modified version applies to all market forms.

Marginal product, of which the exponents of this theory have spoken means marginal physical product  $\times$  price (Average Revenue). The relevant concept is the net increment in the revenue or marginal net revenue product which equals Marginal Physical Product  $\times$  Marginal Revenue. When competition in the product market is perfect, marginal revenue equals average revenue. Hence the value of the marginal product ( $MPP \times AR$ ) and net increment in revenue ( $MPP \times MR$ ) are equal. But, when there is monopoly or imperfect competition, marginal revenue curve lies below the average revenue curve, so that net increment in revenue is less than the value of the marginal product.

Secondly, the marginal product of a factor is not equal to its rate of earning but to its marginal earning. Thus, in the case of labour, marginal (net revenue) product equals the marginal wage. Now, if competition in the labour market is perfect, marginal wage and average wage curves, facing an employer, coincide. Hence marginal (net revenue) product, as it equals marginal wage, also happens to equal average wage. In the case of other market forms it is not so. Marginal wage curve lies above the average wage curve. Marginal (net revenue) product equals marginal wage but is higher than average wage.

She has also taken account of the fact that the entrepreneur uses least-cost combination of factors. Thus, assuming conditions of perfect competition and assuming that he is using only two factors, say labour and capital, when he employs more labour, he also makes an appropriate addition in capital. But capital is also paid at the rate

of its marginal (net revenue) product. Thus when both are in this manner increased:—

$$\begin{array}{lcl} \text{Increment in value} & & \text{Increment in labour} \times \text{Marginal product} \\ \text{of the output} & = & \text{of labour} + \text{Cost of capital} \\ \text{and,} & & \\ \text{Cost of capital} & = & \text{Increment in capital} \times \text{Marginal product} \\ & & \text{of capital.} \end{array}$$

Thus, both the factors receive payments at rates which equal their respective marginal products.

### CRITICISM OF THE THEORY

Even in its modified form, marginal productivity theory remains an unsatisfactory explanation of the determination of earnings of factors. We shall mostly state our arguments in terms of labour though the observations will be equally applicable to other factors. Also, we shall use the term marginal product to signify marginal net revenue product.

*Indeterminateness.* The marginal productivity theory is indeterminate. In a given situation there is not a single rate of wages at which a given number of workers will be employed. On the other hand, in most cases, there is a range within which the rate may change without changing the number of workers employed. For instance, consider the following table:—

No. of Workers Employed	Marginal Revenue Product
	Rs.
10	3-8-0
11	2-8-0
12	2-0-0

Eleven workers will be employed when the rate of wages is Rs. 2-8-0 or less but is more than Rs. 2.<sup>4</sup> Similarly, ten workers will be employed when the wage rate is between Rs. 3-8-0 and Rs. 2-8-0. Marginal productivity theory assumes perfect divisibility of factors so that infinitesimal changes can be made in their amounts but in the real world factors are indivisible beyond a limit.

*Assumption of full employment.* We are told that in equilibrium marginal product of labour equals marginal wage. True. But we cannot conclude from this that marginal productivity of labour determines marginal or average wage. Suppose the wage rate is given. Employers can decide how many workers to employ because they will equate marginal product to marginal wage. But we are not told what determines the wage rate? Marginal productivity will indicate wages only when supply is given. This is assuming

<sup>4</sup> Perfect competition is assumed in this para and the next.

that all workers must find employment. That is, the marginal productivity theory assumes that (at least in the short period) supply of labour (and of every other factor) is inelastic. In fact, however, it is not so. Equilibrium is not always achieved—in fact, it is rarely achieved—with full employment. The theory, therefore, only shows that there is some relation between the rates of earnings of factors and their respective marginal productivities, but it does not enlighten us on how various forces interact to determine the rates of earnings of these factors. (By the way it may also be mentioned that the theory does not take into account the influence of sociological factors like the trade unions, aversion to employment of women, social status attaching to the job, etc., etc.)

*Jump from partial equilibrium to general equilibrium.* Protagonists of the theory start their argument by considering how an employer arrives at a decision regarding employment of factors. They show that he equalises marginal product of every factor to its marginal return. From this they jump to the conclusion that economic system is in equilibrium when marginal product of every factor equals its marginal return. Is such a jump permissible? Many additional considerations arise.

First, how shall we measure the marginal product of a factor in the whole economic activity? Difficulties arise in deciding upon a unit of a factor because, however we define a unit, productivity of different units of a factor will be different for different industries.<sup>5</sup>

Secondly, marginal productivity curve of labour is assumed to be independent of wage rate. However—apart from the effect of higher wages on efficiency—in the short period capital equipment is given and, hence, demand for labour is less elastic. A rise in wages reduces profits and thus adversely affects capital accumulation. Marginal productivity curve will then shift to a lower position as a result of the change in the wage rate itself.

We come now to the most important consideration. When we treat of only one industry, we assume that the general price level is independent of the output of that industry. But how about it when we consider the whole productive activity? Price level cannot be assumed to remain unaffected when the outputs of all industries, taken together, change. Then the question arises whether the relevant concept is real wage or money wage. The advocates of marginal productivity theory did not bother about the divergence between the two. Mrs. Robinson speaks in terms of money wages because on the side of product she speaks of revenue product.

Now, we find that in a period of depression money wage is falling and employment is also falling. The only explanation which marginal productivity theory could give for this is that though

5 Even Mrs. Robinson's concept of "efficiency unit" does not help because what are efficiency units for one industry, may not be so for the other industries. Cf. *Economics Of Imperfect Competition*, pp. 108-113.

money wages are falling, real wages are rising. There is no empirical proof that real wages rise during a depression. And even otherwise, it would not be permissible that the theory is first established in monetary terms and explanations of actual problems follow in real terms.

Anyway, acceptance of marginal productivity theory would imply acceptance of the principle that wage rate determines the level of employment in a country, so that if wages are lowered, more persons will find employment. But a fall in wage rate is likely to reduce aggregate demand for goods in general and is, therefore, likely to reduce opportunities for employment. Aggregate effective demand, and not the wage rate, determines the level of employment.

If marginal productivity theory is incompetent to answer queries of general equilibrium, it is utterly useless as an explanation of the effects of dynamic changes. What determines the level of wages when an economy is advancing, is a question far beyond the reach of this theory.

#### ECONOMIC WELFARE AND DISTRIBUTION OF NATIONAL DIVIDEND

Absolute size of national dividend is not the only determinant of economic welfare. The latter also depends on how this national dividend is distributed among the various sections and individuals.

*Marshall's approach.* Marshall, Edgeworth and Pigou relied upon the principle of diminishing utility to gauge the effects of changes in the distribution of national dividend. The argument given runs thus: "The law of diminishing utility holds good in the case of money so that the larger the amount of money with a person, the less will be its marginal utility. It follows from this that the marginal utility of money to a poor man is greater than that to a rich person. Thus, if some wealth or income is transferred from a rich to a poor person, the gain of utility to the poor man from this transfer will be more than the corresponding loss of utility to the rich man. Such a transfer, therefore, increases total utility to the community." The argument is generalised and is sought to be applied to groups. Assume a given size of the national dividend. Now suppose that the average income of the people in Group A increases while that of the people in Group B decreases, correspondingly. This will mean an increase in economic welfare if people in Group A are poorer than the people in Group B. On the other hand, if members of Group A are more prosperous than those of Group B, economic welfare will diminish by such a transfer of incomes.

*Criticism.* As we have already noted<sup>6</sup>, Robbins raised his voice against application of the law of diminishing utility to comparisons of utilities between persons. He held that policies of transferring wealth and incomes from the poor to the rich do not find any justification in the law of diminishing utility, wherever else one might try to find it. His was thus a condemnation of this approach without any alternative positive suggestion.

*Kaldor-Hicks' approach* In recent years criticism of Marshall's approach has come from Nicholas Kaldor and H R Hicks. But Kaldor-Hicks' criticism, unlike that of Robbins', is not just a destructive one, it suggests an important alternative approach. Kaldor-Hicks approach to the problem of economic welfare may be summarised as follows:

Every individual has his scale of preferences. He tries to satisfy the demands of his tastes, that is, moves up on his scale of preference, as far as possible. There are two hurdles which obstruct his way to a higher position on the scale of preference. First, his productive resources, and the productive power of his resources, are limited. Secondly, tastes and wants of others limit what he gets, if others get more, he gets less. Economic problem thus exists in "an opposition of tastes and obstacles." As people try to satisfy wants, questions of production and exchange arise. The economist has thus to study questions of output and prices. The economist has also to examine how far members of the community advance in satisfying their wants, i.e., the efficiency with which the economic system is working.

An increase in the income of an individual takes him higher up on the scale of preference and thus increases his welfare. But the same rise in income does not increase welfare equally in all cases. Hence increases (and also decreases) of incomes in different cases have to be weighted differently. Two difficulties arise here. First, there is no method of arriving at "weights," which would be universally acceptable. Even if we were to accept Marshall's conception of different marginal utilities of money for the rich and the poor, we are yet unaware of how much is the difference between the two. Whether an increase of ten rupees per month in the income of a poor man is to be considered twice, thrice or four times as good as a similar increase in the income of a rich man, is a question for which Marshall's analysis has no answer. Secondly, can we aggregate the individual incomes? Hicks compares welfare to temperature and individual incomes to many kinds of thermometers "working on different principles and with no necessary connections between their registrations." Like these temperatures, individual incomes cannot be added because their aggregate would carry no meaning whatsoever.

We note two facts. Comparisons between two persons of losses or gains of utility flowing from decreases or increases of incomes are invalid. And aggregates of incomes do not convey any sense. In other words, effects of changes in distribution of incomes on welfare are apparently indeterminate.

There is one way out of this difficulty. One circumstance may improve A's position and worsen B's. Another circumstance may improve A's position without damaging B's. In cases like the second one, conclusions about welfare are easy to arrive at. Such conclusions are unambiguous and not open to objection. A movement, which puts one individual (or group) higher up on his scale of preference without in any way worsening the position of other individuals (or groups), can be said to have increased economic welfare and the

efficiency of the system as a means of satisfying wants. When a situation is reached where it is not possible to enable an individual (or group) to satisfy more wants without bringing some other individual (or group) lower down on his scale of preference, it is the position of optimum organisation of the economic system.

Kaldor-Hicks' approach refuses to pass judgment on inter-personal or inter-group transfers of incomes. It attacks where the citadel is sure to fall. Only in such cases is economic welfare of the community deemed to have increased where incomes of some have increased and of the others have not decreased. Real income of the Society in year No. 2, is considered higher than in year No. 1, if it was not possible to make, by change of distribution in year No. 1, everyone as well off as he is in year No. 2. Kaldor-Hicks' approach, like Marshall-Pigou approach, assumes absence of changes in tastes.

*Conclusion.* The upshot of Robbins' criticism and Hicksian analysis is this: When, for increasing welfare, the economist recommends increase in social production, he has a definite and dependable basis for it. But, if for the same purpose he recommends reduction in distributive inequalities, he is not on sure grounds, because on economic grounds it is not possible to say which pattern of income distribution will make welfare maximum.

Marshall suggested a basis for recommending reductions in inequalities. Robbins, Kaldor and Hicks, have shown the hollowness of the basis. But while the economic basis for a policy with such a purpose has been challenged, humanitarianism and socialistic ideas have supplied new pegs to support it. Social justice, it is said, demands that transfers of incomes are made from those who have enough and to spare to those who cannot afford reasonable standard of living. In other words, distributive justice is a constituent of social justice. On this ground, reduction in inequalities of wealth, incomes, and opportunities is placed before the economist as an end in itself.

#### SOME ILLUSTRATIONS

Let us imagine a few specific changes in the size and distribution of national dividend and see what interpretations we could place on them according to Marshallian and Hicksian scheme of things. In all these cases, we assume that tastes remain unchanged, as also the commodities which enter into consumption.

*Case I.* National dividend has increased by 10 per cent but inter-personal distribution of incomes has not changed. According to Marshallian as well as Hicksian concepts, economic welfare has increased by 10 per cent. If national dividend had decreased by 10 per cent, economic welfare would have decreased by the same percentage.

*Case II.* National dividend has increased by 10 per cent. Inter-personal distribution has also changed in such a manner that incomes of 'c' have increased, but those of the rest have not changed. Of course,

in some cases, the increase in incomes has been more than in others. Both Marshallian and Hicksian analysts will conclude that economic welfare has increased. It is, however, not possible to determine the percentage increase in welfare. And what is true of increase in national dividend is, *mutatis mutandis*, true of a decrease. Also, conclusions would be no different if all incomes increased (or decreased), unequally.

**Case III** National dividend has not changed. Inter personal distribution has undergone a change so that some incomes have increased while others have fallen. Followers of Kaldor and Hicks would refuse to put any interpretation on this happening. Followers of Marshall and Pigou would say that if the transfer of incomes has been from the rich to the poor, economic welfare has increased. And if the rich have gained at the expense of the poor, welfare has diminished.

**Case IV** National dividend has increased and also inter personal distribution has changed in favour of the poor. Marshallian analyst would conclude that economic welfare has increased. If, however, the increase in national dividend is accompanied by a change of distribution in favour of the rich, he would find one factor tending to increase welfare opposed by another factor tending to reduce it. As he cannot be sure of their quantitative pulls, he declares the position indeterminate. Similarly, a decrease in national dividend accompanied by a change of distribution in favour of the rich would, tested by Marshallian instruments, reduce the welfare. If national dividend decreases but poorer sections gain at the cost of the rich, the position cannot be interpreted.

In all the different situations of case IV, the Hicksian analyst would wear bewildered looks, because he is not in a position to form an opinion.

#### MEASUREMENT OF INEQUALITIES OF INCOMES

We have pointed out in Chapter I that it is the reduction in, rather than the elimination of, inequalities of incomes which economic policy comes to aim at. How much differences are to be allowed,—that is, what would be an ideal distribution of wealth—none can say with any exactitude. Similarly, there is no universally acceptable measure of inequality. Even if there could be such a measure, we could not infer from it how far the country stood removed from the ideal, as the picture of the ideal itself is hazy. Some methods may, however, be suggested for measurement of inequalities.

1 *Highest and lowest incomes.* An idea of inequalities may be had from the highest and the lowest incomes obtained in the country. The gap is generally represented by the ratio which the highest income bears to the lowest income. Efforts may then be made to narrow the gap between the two.

2 *Differences between social groups.* Differences of average incomes between different geographical, racial, and social groups

may be studied. For instance, differences between average incomes in urban and rural areas, between physical and mental workers, and between earnings of labour and capital may form a good guide for economic policy. The Planning Commission of India, in the First Five-Year Plan, gave high priority to rural uplift so as to reduce inequalities of incomes between rural and urban areas.

3. *Formation of income groups.* Another method is to find and record the number of person in various income-groups. In the light of history, religious leanings, sociological factors, and geographical situation and climate, various income-slabs may be assumed to represent incomes of the rich class, upper-middle class, lower-middle class and the poor class. We may then be able to say what proportions of population fall under different categories. Obviously, the definition of the categories will be arbitrary and there will be much scope for the whims and prejudices of the investigator. Figures obtained by this method may also be used to bring out the fact, common to all capitalist economies, that quite a large chunk of the income accrues to a very small group of people. This latter fact may also be brought out by proper compilation of income-tax returns.

4. *Deviation from average.* A statistician would measure inequalities by finding out per capita income and then calculating how far individual incomes deviate from this figure. An average of deviations (without reference to plus or minus signs) gives an idea of inequality of distribution. Calculation of a mathematically exact figure of average deviation is a stupendous task in any country, because the investigator must know the income of every individual, and there are millions of such figures to handle. Nevertheless, approximate average deviation can be found even from the schedule of income-groups.

#### CAUSES OF INEQUALITIES IN INCOMES

*The fact of inequality.* That distribution of incomes is extremely uneven in all capitalist countries, is a fact which admits of no doubt. Even in a country like the U.S.A., which claims 43 per cent of the aggregate annual production of the world, 40 per cent of the people earn less than what would give them a reasonable standard of comfort. In India only one per cent of the population claims one-third of the total national income, the remaining two-thirds being shared by 99 per cent. Let us study the factors which give rise to inequalities.

*Differences in resources.* Kinds and qualities of resources owned by individuals are dissimilar and unequal. This is so, firstly, due to inequalities of inheritance. Some people inherit fertile or well-situated lands while lands inherited by others are of inferior quality. There are still others, who do not possess any landed property at all. Similarly, some inherit large bank balances from their parents while others inherit only debts. Inequalities in property ownerships can sometimes be explained by differences in propensity to save. There are persons who are calculating, have a self-control, and have imbibed habits of thrift and economy. There are others who arereckless and callous.

and have learnt only to live beyond their means. The thrifty, in due course of time, come to possess resources which yield income, while the prodigal have to depend exclusively on their labour. Business chances are also helpful to some and unhelpful to others. Future lies in the lap of the uncertain and even the best calculations cannot anticipate all that is to happen. Those, whom chance favours, make fortunes and come to own property, which will yield income. Those on whom fate frowns lose even what they had inherited or saved by hard labour. Thus we come across two classes of haves and have-nots, the latter, as a rule, having lower incomes than the former.

There are, then, different categories of property. Equal investments in different assets yield different incomes. It has generally been observed that land as a property is less remunerative than equal investment in industry or trade. Yet, people continue to hold on to land for various reasons. It is, firstly, because some amount of social prestige attaches to ownership of land. Moreover, population of the world has been increasing and the pressure on land has been mounting. Consequently, value of land has been rising. It is in anticipation of such rises that owners of land continue to be content with a lower income of land and do not shift over their investments. Many people also distinguish between investments where the owner has to be active and those where he is passive. Holders of shares of corporations are more or less passive in respect of this category of their investment. Similarly, those who rent out their lands to tenants, have only to make permanent improvements at intervals. Those who own buildings have to trouble only about collecting rents and occasional repairs which are much easier jobs than shouldering the hazards of a business. Investments, in respect of which the owners have to be less active, are generally less remunerative and yet their owners do not exchange them for more paying ones, which will involve work and attention on their part.

*Differences of efficiency.* Even among the have-nots there are vast differences of income. These differences are mostly explained by differences in efficiency. Accidents of birth and natural differences of talents explain the differences in efficiency. A foreman is lower paid than an engineer, because the latter is more efficient. He is more efficient because of his education which he could have because of superior talents or richer parents or both. Even between people with equal education there are differences because some happen to be more intelligent and can more swiftly, easily, and comprehensively grasp the implications of different situations than others.

*Immobility of factors.* Immobility of factors—geographical, horizontal as well as vertical—is also a cause of inequalities of incomes. Some occupations are open only to a few for natural or other reasons. Similarly, in trades where producers' combinations are well organised, entry may be impossible. Where trade unions are strong, entry is regulated and wages kept high. In a country like India, mobility of

labour is kept low by social institutions like caste system and joint family system.

*Regional differences.* Differences in incomes also arise because different regions are unequally advanced. Some regions have poor natural resources and, hence, offer poor employment opportunities to their residents. Also, the social and political history of different regions is dissimilar. They, consequently, find themselves in different stages of economic advancement. India, according to the late Henry Wolff, is a country "where nature dances a generous dance, poverty plays a mournful tune." Explanation of a richly endowed country being inhabited by a poor populace, lies in her political history and social institutions. On the other hand, prosperity of U.S.A. is in no small measure explicable in terms of the initiative and industry of the sturdy Europeans who migrated to that country after Columbus discovered it.

*Factors reducing inequalities.* In recent years, certain factors have appeared which tend to reduce inequalities. The reference is not to abolition of private property in controlled economies, but to the factors which are at work within the framework of the capitalist system. The most important of these is the welfare activities of the State. In most countries, the role of the State has changed from its being a police entity into a welfare entity. Tax systems are so contrived that the rich have to contribute more to the exchequer than the poor. Taxes are made progressive and more of such commodities are taxed which are consumed by the rich. A large proportion of the revenue of the State is directed towards the uplift of the poor. Educational facilities, unemployment benefits, social insurance benefits, and the like, are provided for the poor. Employment exchanges, fixing of minimum wages, and other such steps also reduce inequalities. In most countries, the State also works for a planned development which is so conceived that, apart from increasing the total national income, it also reduces inequalities of incomes. Means of transport and spread of education increase mobility of factors and thus tend to reduce inequalities. Political consciousness, voting rights and parliamentary system of government have given the layman a faith that he is an equal citizen with others and presses his right for a reasonable living.

## ADDING-UP PROBLEM

*The problem.* Marginal productivity theory is a source of another controversial issue, viz., the adding up problem. As the rate of payment of every factor equals its marginal product, total product must equal the sum of the quantities of factors, each multiplied by its marginal product. Thus, if,

1.  $P$  is the total product,

2.  $a, b, c \dots$  are the quantities of various factors of production

3.  $m_1, m_2, m_3 \dots$  are respectively the marginal products of these factors of production,

then,

$$P = m_1 a + m_2 b + m_3 c + \dots$$

The problem of demonstrating that this equation holds, has been called the adding up problem. If we carefully scan the equation, then the problem will be found to be that when the entrepreneur has made payments to all factors in accordance with their marginal products, he must be left with such an amount as just measures his own marginal product.

Let us, at the very outset, dispose of an explanation given by some writers. It is said that an employer always has the option of taking service as an employee, therefore his earnings cannot be less than his marginal product as an employee. His earnings cannot be higher than that, either, on account of competition. But this argument ignores the fact that an employer selects that industry in which he is most efficient. The alternative employments, open to him, may be such in which he is not as efficient. Also, the argument assumes that every employer earns normal profit, which is absurd.

*Wicksteed's solution.* Wicksteed made use of what is known as Euler's theorem in Mathematics, to establish the validity of the above equation.<sup>7</sup>

<sup>7</sup> Euler's theorem states that if  $P$  is a homogeneous function of  $a, b, c, \dots$  of  $n$ th degree, the sum of the variables each multiplied by the partial derivative of  $P$  with respect to that variable, is equal to  $n$  times  $P$ . As we are concerned with a homogeneous function of the first degree, we may demonstrate the validity of it as under—

$$\text{Let, } P = \alpha a + \beta b + \gamma c + \dots$$

$$\text{Then, } \frac{\partial P}{\partial a} = \alpha, \quad \frac{\partial P}{\partial b} = \beta, \quad \frac{\partial P}{\partial c} = \gamma$$

$$\text{Hence, } P = \alpha \frac{\partial P}{\partial a} + \beta \frac{\partial P}{\partial b} + \gamma \frac{\partial P}{\partial c} +$$

If  $P = f(a, b, c, \dots)$  is a homogeneous function of the first degree, then,

$$P = a \cdot \frac{\partial P}{\partial a} + b \cdot \frac{\partial P}{\partial b} + c \cdot \frac{\partial P}{\partial c} + \dots$$

Let us translate it into simple language.  $P = f(a, b, c, \dots)$  means that output is a function of the quantities of factors used. That this equation is a homogeneous function of the first degree, implies that conditions of constant returns prevail.  $\frac{\partial P}{\partial a}, \frac{\partial P}{\partial b}, \frac{\partial P}{\partial c}$  etc., are marginal products of the factors<sup>8</sup>. Operation of constant returns here implies that a given proportional increase (say 2%) in the quantities of all factors will result in an addition to the total output in the same proportion (i.e. 2%). Assuming that constant returns prevail in this sense, Wicksteed has shown with the help of Euler's theorem that the total product equals the sum of the quantities of factors, each multiplied by its marginal product.

Wicksteed realised that if competition is imperfect, conditions of constant returns cannot be assumed. For, every increase in the factors of production will increase total output which has to be sold at a lower price. Hence, even if an increase in the quantities of factors produces a proportionate increase in the physical quantity of output, increase in revenue will be less than proportionate. Wicksteed, therefore, confined his attention to conditions of perfect competition. Pareto pointed out that even under perfect competition constant returns may not operate. Of course, for a producer the price is the same whatever the output, but there may be diminishing returns on account of diseconomies.

2. *Wicksell's solution.* Wicksell attempted a solution with the help of two propositions, one made by Clark and the other by Walras. Clark had argued that as entrepreneurs have no function to perform in a static economy, profit must be zero. Walras had pointed out that in perfect competition equilibrium is established at a point where average cost is the minimum and at that point average cost is neither rising nor falling.

Wicksell said that when costs are constant and physical returns are also constant, profit will be zero. He then proceeded to show that constant physical returns must prevail in perfect competition. There cannot be increasing returns because they are incompatible with perfect competition. There cannot be diminishing returns either, because, in that case, profits will be positive and new entrants—"eager to share this painless method of earning a livelihood"—will increase the output, reduce the price, and bring the profits down to zero. Wicksell's argument, thus, rests on the assumptions of perfect

8 It is evident that  $\frac{\partial P}{\partial a}, \frac{\partial P}{\partial b}, \frac{\partial P}{\partial c} \dots$  are  $m_1, m_2, m_3 \dots$  of the equation which we set out to start with.

9 It must be noted that constant returns in this sense are compatible with the operation of diminishing returns when only one factor is increased and others kept constant.

competition and zero profit. With these two assumptions, constant returns prevail at the point of equilibrium and Euler's theorem can be applied for the solution of the adding up problem.

3. *Mrs Joan Robinson's solution* Mrs Robinson has in her article "Euler's Theorem, and The Problem Of Distribution"<sup>10</sup> attempted to give a comprehensive solution of the problem. We set out below her arguments in steps.

(a) *The case of a firm in perfect competition* It is difficult to give any definite meaning to the term marginal product of the entrepreneur to his firm. For analysis, we may imagine three cases. First, suppose there is no function of decision making. Supplier of one of the factors undertakes to make payments to other factors. He will employ the other factors up to the limit where their marginal products equal their respective wages. His own factor will also be on the same footing. There is no entrepreneurship. Profit is zero. In this case, then, average cost is minimum, constant physical returns will prevail and Euler's theorem provides the solution.

Secondly, suppose that entrepreneurship is like any other factor in that the "quantity" of decision making varies with the output. That, when he applies a larger "quantity" of it, there is a larger output, and he persuades himself to do so only if there is a promise of a larger reward. Decision making, then, becomes like any other factor and the "rate" of its reward equals its marginal product. There is no profit in the sense of a surplus. Constant costs again mean constant physical returns. Euler's theorem can be applied to solve the problem.

In the third case, we assume that entrepreneurship is a single indivisible unit, i.e., decision making is the same whatever the size of the output. Here marginal product of entrepreneurship has no meaning. The only meaning which can be given to constant returns is that quantity of output increases proportionately as quantities of factors, other than entrepreneurship, are increased. In this case it can easily be shown that if normal profit is positive, constant physical returns do not prevail when costs (including profit) are at the minimum. With positive normal profit, output, where average cost is the lowest, is larger than the output at which constant returns stop operating and diminishing returns begin to operate.

To illustrate it let us suppose that there is only one employed factor (or composite of factors) —call it labour. Also suppose that wage rate is Rs. 5. As entrepreneurship remains the same whatever the output, normal profit is the same for all levels of output.

TABLE 23-a

No. of Labourers	Marginal Output	Total Output	Total Cost of Labour	Normal Profit	Total Cost	Average Cost
1	2	3	4	5	6(4+5)	7(6/3)
1	5	5	5	20	25	5
2	6	11	10	20	30	2.7
3	7	18	15	20	35	1.9
4	7	25	20	20	40	1.6
5	5	30	25	20	45	1.5
6	4	34	30	20	50	1.48
7	3	37	35	20	55	1.51
8	2	39	40	20	60	1.54

It is clear from the above table that while economies of scale yield place to diseconomies as the number of labourers is increased beyond four, average cost is minimum when the number of workers is six. This is so because average cost includes profit. Profit per unit diminishes as output increases and beyond four labourers fall in profit per unit exceeds the rise in labour-cost per unit. Beyond six workers, the latter takes the lead.

In this case, then, where there is equilibrium (with six labourers), costs are at their minimum but diminishing physical returns are arising. The number of firms comes to be such that diminishing returns to the individual firms prevail to just such an extent that normal (positive) profits are being earned. Profits being normal, new firms are not attracted and output of individual firms is not driven back to the level where constant physical returns prevail.

(b) *The case of an industry in perfect competition.* If one entrepreneur leaves the industry, factors of production, which were employed by him, get distributed over other firms. Total output due to these quantities of factors is less when employed by other firms. The difference is *marginal product of entrepreneurship to the industry*. It may be defined as difference made to the total output of the industry by a unit reduction in the number of entrepreneurs (or firms).

When constant physical returns are prevailing, marginal product of every factor to a firm is equal to its marginal product to the industry. When, however, economies of large scale are arising, marginal products of factors to the industry are greater than the same firm. For, when increased quantities of factors are used by a

firm, not only do marginal products of factors to this firm increase, other firms also derive some benefit. In calculating the marginal products to the industry, not only the former but also the latter must be reckoned. Quite similarly, where diseconomies are arising, marginal products of factors to the industry are less than the same to a firm.

As competition is perfect, the number of firms is very large. We can, therefore, safely assume that marginal physical products of factors do not change if the number of firms is reduced by one. In other words, if the number of firms is  $n$ , given amounts of factors will have the same marginal products whether the number remains  $n$  or becomes  $(n - 1)$ .<sup>11</sup>

Now, let us suppose for simplicity that the entrepreneur employs only one factor (or composite of factors)—call it labour. Suppose further that constant physical returns are prevailing. Marginal physical product of labour to the industry will equal its marginal physical product to a firm.

Marginal product of entrepreneur-ship = output of one firm—output of labour employed by it if it is distributed among other firms  
 = Receipts of the firm—(amount of labour  $\times$  m.p. of labour)  
 = Receipts—costs  
 = Profit

When increasing returns are operating, then marginal product of labour to the industry is rising. The amount of labour multiplied by its marginal product exceeds total output. That, however, is understandable. For, as we have noted above, when there are increasing returns marginal products of factors to the industry exceed the same to the firm. Every factor is paid a wage equal to its marginal product to the firm and not to the industry.

Total output	=	Quantity of the factor $\times$ its marginal product to the firm
but,	Total output	< Quantity of the factor $\times$ its marginal product to the industry

Similarly, when diminishing returns are operating, wage of a factor is equal to its marginal product to the firm, but is greater than marginal product to the industry.

<sup>11</sup> It must however, be clearly understood that while marginal products of the factors do not change by the disappearance of a firm, total product of the factors which it was employing does become less. It is this difference which is the marginal product of entrepreneurship.

(c) *The case of a firm in imperfect competition.* In considering

the case of perfect competition we have spoken of constant physical returns without mentioning whether increase in factors is measured in physical terms or in terms of outlay on them. It was not necessary, either, to distinguish between the two. When competition in the factor market is perfect, additional quantities of factors can be obtained at the same price. Increase in the outlay is exactly proportional to increase in quantities of factors. In conditions of

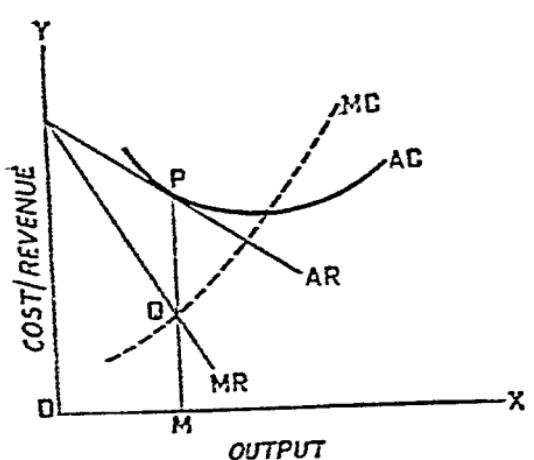


Fig. 23.2.

imperfect competition, larger supplies of factors can be obtained at higher prices. Hence outlay increases at a faster rate than the quantities of factors. If we reckon factors in terms of outlay, we must reckon output also in terms of money-value. Hence to find out returns to scale in the relevant sense, we have to find the relation between money outlay and value return. If a given proportional increase in outlay produces an equally proportional increase in the value of the output, constant returns will be prevailing. Euler's theorem would apply to such a case because,  $a$ ,  $b$ ,  $c$  . . . . as well as  $P$  are being computed in terms of money.

(i) *Zero profit.* Consider the case of a firm in monopolistic competition where normal profit is zero. As shown in the above diagram, it is in equilibrium with an output  $O.M.$ <sup>12</sup> With this output, average cost curve is falling. It means larger output can be produced with proportionately less outlay. But, average revenue curve is also falling, which means increased output can be sold at a lower price. If price is falling less rapidly than average costs, there will be increasing returns. Also, if price is falling less rapidly than money outlay, slope of the demand curve will be less than that of the average cost curve. Similarly, if price is falling more rapidly than outlay, diminishing returns (in terms of value returns to money outlay) will be operating and, also, demand curve will have a greater slope than the average cost curve.

In equilibrium position of the firm, i.e., at  $P$ , demand curve is tangential to average cost curve. Their slopes are, therefore, equal. Hence at this point, value returns in terms of money outlay are constant. And once we know that returns are constant, we can, on the basis of Euler's theorem, say that all factors are receiving payments in accordance with their marginal products to the firm and the residue is zero.

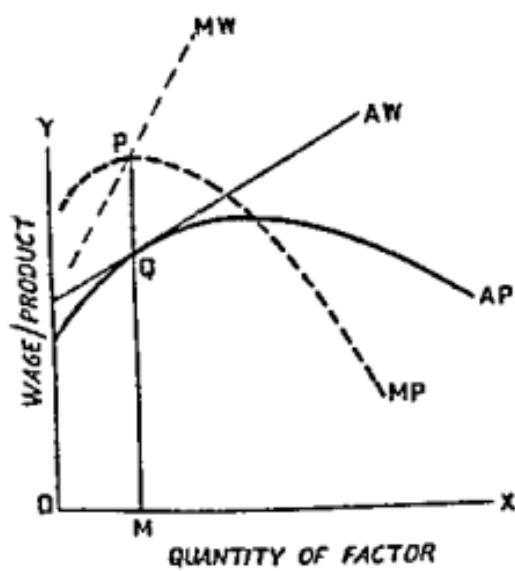
<sup>12</sup> Normal profit being zero, no profit is included in the costs.

(ii) *Positive profit* Now take the case of a firm in monopolistic competition where normal profit is positive. At the point of equilibrium marginal cost and marginal revenue are equal. But average revenue curve lies above the average cost curve. The slope of the former is greater than that of the latter. In other words, price is falling more rapidly than money costs and hence there are diminishing value returns to outlay. The existence of positive profit is thus compatible with Euler's theorem.

(d) *The case of industry in imperfect competition* In studying the case of an industry in imperfect competition, let us assume that conditions of constant returns prevail in the industry.

We know that when competition is imperfect, marginal product equals marginal wage and not average wage. Marginal wage being higher than average wage, the rates of wages for factors lie below their marginal product.

For instance, in Fig 23.3 equilibrium of the factor is  $OM$ . Its marginal product is  $PM$ , but its wage rate is  $QM$ . Hence factors of production are paid at rates which are below their marginal products.<sup>13</sup> The entrepreneurs therefore get high profits. It is so because the plants are worked below optimum capacity in imperfect competition. Marginal product of entrepreneurship is high. Their profits are



also high<sup>13</sup>

<sup>13</sup> It might be objected that we are on the one hand, assuming constant returns and on the other showing MP and AP curves as separate and curved. But as already observed constant returns to increases in all factors are compatible with diminishing returns to increases in one factor only. Moreover returns are constant to the industry, not to the firms.

## CHAPTER XXIV

### MONEY AND ITS IMPORTANCE

Up till now we have discussed two questions, *viz.*, the equilibrium price and output, and the determination of income earnings. Analysis of demand was ancillary to these two studies. In all this analysis, the problem related to a single industry in a country. Thus our analysis extended to the micro-economic field in a closed economy. Let us now proceed with a study of macro-economic problems. We shall continue to assume a closed economy in some of the following chapters. But in Chapters 31-3, we shall remove this assumption and take account of the fact that there are in the world a large number of countries, interconnected and interdependent.

#### DEFINITION OF MONEY

*Multiplicity of definitions.* Money is one of those terms which are difficult to define. Many definitions have been suggested. Every one of these definitions is superior in its own place because different definitions are appropriate for different purposes. Difficulties of defining money can be understood only after we have studied the functions of money.

*Our definition.* Many writers on monetary topics agree on a number of points. They agree that money is an instrument of exchange. They also admit that a thing is money only if it is acceptable to a fairly large number of people. It is also conceded that its acceptability rests, not on the fact that those who receive it have a direct use for it, but on the fact that they are confident that it will be accepted by others when they, in turn, purchase goods and services. But the term "fairly large number" is difficult to define. It is more convenient if we speak in terms of its universal acceptability in a given area and thus assign money the position of general purchasing power. Universal acceptability in an area can generally, though not always, be assured only by the sanction of law. We, therefore, include in money all those things which are readily and universally accepted in an area in discharge of business obligations. Such business obligations might be the result of the purchase or use of a product, or of a factor of production, or might arise out of a loan.

*Money-of-account and money proper.* We would do well to distinguish between money-of-account and money proper at the very outset. Rupee was introduced as common money in India in 1833.<sup>1</sup> Since then rupee has continued to remain our standard coin. But its contents and shape have been changed a number of times, so that a rupee

<sup>1</sup> Before that there was a bewildering variety of gold and silver coins in circulation.

coin today is smaller and contains less silver than the rupee of, say, the Victorian era. Suppose a man took a non-interest bearing loan of Rs 500 in 1880. If he had repaid the loan in, say, 1888, he would have paid five hundred "bigger" and "richer" Victorian rupees. Today he can clear off the debt by paying five hundred smaller "lion pillar" rupees which contain less silver. The repayment in both cases is of the order of Rs 500. But in one case rupee means one kind of coin and in the other another kind of coin. Rupee continues to be our standard coin but our rupee has changed. In economic parlance we would say that money of account has remained the same, but money proper has changed. Money of account is that in terms of which prices are expressed, contracts are made, and accounts are kept. Money proper is that in terms of which prices are paid, loans are cleared, and business obligations are met. Money-of account is the description, money proper is what conforms to that description.

### FUNCTIONS OF MONEY

Money performs three important functions. It serves as a medium of exchange. It provides a uniform standard of value. And it serves as a store of value.

*Medium of exchange.* Exchange is indispensable to a society in which there is division of labour. Direct exchange of goods, i.e., barter, is possible only when there is double coincidence of wants and possessions. Either party possesses and spares exactly what the other party wants. Not only have wants and possessions to coincide in kind and quality but also in quantity. Hence barter also requires that either the two commodities exchanged happen to be of equal values, or that they are perfectly divisible. These difficulties are solved when money intervenes as a medium of exchange. For instance, if a person has a knife to sell and a pen to get, he first finds a buyer of knife who need not possess a pen. The knife is sold for money and the money is paid to procure the pen. Money can perform this function because of its general acceptability. A medium of exchange renders an invaluable service whatever the stage of economic development, but its importance in an economy characterised by complex division of labour and large-scale production can hardly be over-emphasised.

*Standard of value.* The other function which money has to perform is to provide a unit of account, a denominator in terms of which all values are expressed. All kinds of money, i.e., all those kinds of things which are serving as media of exchange, do not perform this function. Only one of these, known as standard or definitive money, serves as a unit of account. Not only are prices of goods and services expressed in terms of this unit of account, even the values of other kinds of money are expressed as multiples and sub-multiples of it. Thus, in our country, rupee is the standard money. The other

moneys are two-rupee notes, five-rupee notes, half-rupee, one-fourth rupee, etc., etc. Money, by providing a common measure of values, makes calculations easy and comparable.

Subsidiary to the function of money as a unit of account, is its function to serve as a standard of deferred payments. Promises of future payments arise out of present (or past) transactions. A person, who makes a purchase on credit, does so on a promise of future payment. Similarly, when a person takes a loan, he does so on a written or verbal promise to make repayment at a future date. What would be the form and value of future payment, has to be decided at the time of transaction which gives rise to it. Money provides a convenient form as well as measure of this payment.

*Store of value.* Lastly, money serves as a store of value. Whenever we want to put aside some value for future use, we keep it in the form of money. Other things may physically perish, or may otherwise lose their value. Or, may be that they are too bulky or too heavy to handle. Generally, the commodity selected to serve as money is such as has the minimum of these defects. More important than this is, however, the certainty that it will be generally acceptable in exchange for any commodity or service. Its chief recommendation for the job of a store of value is that it is the most "liquid" asset.

*Defining money on the basis of functions.* Considering the medium-of-exchange function of money, we can define money as anything which serves as a means of payment. But things may serve as means of payment in a very limited circle and may not be generally—much less, universally—acceptable. Such a definition would include more things in the category of money than we would. Similarly, in deference to the measure-of-value function of money, Cannan defines it as "the unit of account commonly used in purchases and sales and other commercial transactions."<sup>2</sup> This definition is too narrow because it would give the status of money to standard money only. As money serves as a store of value, it may be defined as a 'the most liquid' asset. Liquidity of an asset is defined as the readiness with which it can be converted into money without losing its value. Obviously, to define money in terms of its liquidity is to define it in terms of itself, which is absurd. It is in view of this bewildering situation that Seligman observed that money is what money does, i.e., money is that which performs the functions of money. This definition, it will be realised, carries us back to functions and we find ourselves arguing in a circle.

Only standard money serves as a standard of value. All kinds of money perform the other two functions, i.e., medium of exchange and store of value functions. Much confusion has arisen from regarding the one or the other. We shall have a taste of it when we come to discuss the quantity theory of money in Chapter-XVI.

2 *Money*, p. 2.

### IMPORTANCE OF MONEY

*Its importance lies in its functions.* The importance of a factor in a situation arises from the functions which it performs in that situation. The importance of money to an economy lies in the fact that it removes the difficulties of barter system of exchange. It obviates the necessity of double coincidence of wants and possessions. It also enables the people to overcome the difficulty created by indivisibility of commodities. It provides us with a convenient medium in which savings can be kept. Large-scale production is made possible, borrowing and lending smooth, and taxation easy.

*Importance to consumers.* The importance of the role of money can be gauged by considering how it proves helpful to various economic units. Take a consumer. His scale of preference depends on the relative importance of the uses to which various commodities can be put. Relative importance is subjective and, hence, he is himself the best judge of it. But scale of preference also depends on the relative prices of various commodities. Comparison of prices is easy to make only if all prices are expressed in term of a single denominator. Money provides such a denominator. Such scale of preference having been drawn, decisions about purchases are easy. Use of money, therefore, enables a consumer to make an economically rational distribution of his income among various items of expenditure.

*Importance to producers.* In selecting the industry he would enter, a producer has to compare the profits which he hopes to earn in the various avenues. Similarly, in deciding the size of his output he has to compare the profits which he will earn with various sizes. To calculate profits, he must compare costs and prices, which can be easily compared only if they are expressed in a common denominator. Money becomes that denominator. The producer has also to compare the payments for and the productivities of the factors for deciding how much of them he would employ. Once again money is helpful because wages, interest, and rent can be expressed in terms of money and can easily be compared with marginal revenue products of the factors. And making of payments to the factors also becomes easy because material used for money is such that it is easy to handle, to store, and to carry.

*Money is not the end product of economic activity.* Money is thus an important instrument. Most of us, however, are apt to consider it more important than it really is. In the modern world a man usually gets reward for his services in the shape of money. Money is a title to goods and the more money a man has, the more goods he can procure. It becomes, therefore, our endeavour to see that we get the maximum of money for our services. Our attitude to increasing our money incomes so often assumes the form of treating money as the end product of all our economic activity.

We forget that what is required is to increase the amounts of goods and services which become available to us, and that more money may not always mean more goods. A higher money income will entitle a person to less goods if in the meanwhile prices have risen more steeply than his income. We may, therefore, have ample money and yet may not be able to lay our hands on goods we require. A millionaire with a lorry-load of currency notes might die of thirst in a desert. All his money will not help him to get a glass of water, just because there is no water. If only an increase in the amount of money could make the people richer, there would have been no need for planning commissions; only the printing of more notes would have done the magic. A country's prosperity is proportional to the size of its national dividend. Money helps as a generally acceptable medium of exchange. It is an instrument for social use. To treat it as an end-product is completely erroneous.

#### MONEY AS A VEIL

*The real attitude.* While many laymen have an exaggerated notion of the importance of money, some economists have struck the other extreme. They speak of money as if it were just a wrapper for goods and services. They consider it just a veil which, though helpful, is a passive entity in the drama of economic activity. This "veil attitude" may be described as under:—

"The economist is interested in finding out what policies would promote economic welfare. Satisfaction, arising out of the use of economic goods, can be increased by making more economic goods available. In a money economy, command over economic goods is usually first procured in the form of money. Money is a useful social instrument in the economies of today. But money is just a medium of exchange. By serving as a go-between in transactions, it helps to make the process of exchange smooth. But that is all about it. Money is thus a tool of convenience which facilitates the run of economic activity but is not a determinant of the level of that activity.<sup>3</sup> It helps to carry the goods and services to their destinations, that is, the consumers, but it is not a determinant of the quantities produced of them. It is a veil which the economist must pierce through to have a look at what is *real*, i.e., the production and use of goods."

The treatment of money as just a veil or wrapper is misguiding. It had a very disastrous effect on the mode of thinking of the classical writers. Treating money as a veil, they set out their analysis in *real* terms, i.e., in terms of goods and services produced and exchanged. In the ultimate analysis, they said, goods are exchanged for goods.

<sup>3</sup> The position is analogous to that of a catalyst in a chemical action. A catalyst makes a chemical action swift, money makes the process of exchange smooth. Like a catalyst, money cannot change the contents of what it operates with.

A man, who produces one thing, creates a demand for the other things, which he would purchase. Supply thus creates its own demand. How could, then, there be a general glut?

*Monetary system is an integral part of economic system.* There is no doubt that, in the ultimate analysis, goods are exchanged for goods (period taken being sufficiently long). There is also no doubt that communities can exist and have existed in the past, without the use of money. But money, when introduced, does not remain just a tool of convenience. It influences the operative forces in the situation in which it is introduced. And all its influences are not of a helpful variety.

It is not the case that given goods and services would ultimately reach the consumers with as well as without money, the use of money only making it easier. The very fact, that exchanges become smooth with the use of money tends to multiply the number of these exchanges. The difficulty of bringing about double coincidence of wants under barter drives many individuals to exchange their possessions for less wanted goods. Because of the same difficulty many transactions are not considered worth undertaking. This limits the amount of the product which a producer can sell. As producers can sell less, they also produce less. Specialisation, use of machinery, large-scale production and foreign trade are well nigh impossible and, hence, production is much reduced.

A change in economic activity may necessitate a change in monetary policy. But a change, or a failure to bring about a change, in the monetary policy in its turn influences economic activity. Relationship between monetary policy and economic activity is one of action and reaction. Even the initiative might come from the side of monetary policy. The use of money as a social instrument is not a factor passive in respect of the level of economic activity. We cannot look after the 'economic system' and leave the 'monetary system' to look after itself. Monetary apparatus, when it is there, becomes a part of the economic system. It influences, and is influenced by, the other constituents of that system. Violent and continuous changes in the value of money shake the confidence of the people in the stability of the economic system and keep the less venturesome people away from the field of investment and production. Similarly, such changes affect trade, contracts, and borrowing and lending.

Thus monetary apparatus is not just a veil which covers the economic system. On the one hand, it serves the latter as a tool of convenience, but, on the other, it adds to its complexity. Its use does solve some problems, but it also creates new ones and some of the new problems are very complicated indeed. It was with reference to such complicated problems created by money that Disraeli observed, "Money has made more people mad than love."

#### KINDS OF MONEY

*Legal tender and optional money.* At this stage we may familiarise ourselves with a number of terms. There is, first, the distinction

between legal tender and optional money. The former includes all those forms of money which one resident of the country must accept from another resident up to unlimited amounts in discharge of business obligations. This status is the result of legal provision and he, who refuses a payment in legal tender, is liable to prosecution. In our country, rupees and all currency notes are full legal tenders. On the other hand, optional money is one which, by convention, has come to be widely accepted though there is no legal compulsion for that. Some Afghan coins of smaller denominations circulate freely in some parts of the North-West Frontier of Pakistan without any legal sanction of the Pakistan Government behind them. Between these two kinds lies subsidiary money which must be accepted in payment up to a given amount, but in excess of that amount it may or may not be accepted. Thus, four and eight-anna pieces in our country are legal tenders up to a payment of ten rupees, but for larger sums their acceptance is optional.

*Standard money and convertible legal tender.* Our rupee coin is standard money. A five-rupee note is a convertible legal tender. The latter is a written promise by the Governor of the Reserve Bank of India that he would pay five rupees in exchange for it whenever its holder so desires. We do not find any such promise on a one-rupee note. It is a "rupee counterpart", that is, it is a rupee for all practical purposes. It is in terms of standard money that values of all goods and services as well as values of other moneys are expressed. A five-rupee note is convertible but it is a legal tender. This means that a resident must accept such notes from another resident in discharge of business obligations, but he may not accept them from the issuing authority, i.e., the Reserve Bank. A rupee coin or note, on the other hand, being standard money, must be accepted even from its issuing authority, the Government of India.

*Taken and full-bodied money.* We often hear that our rupee is worth only four annas. This means that the silver contained in it is of that value. In other words, its market value is more than the value of its contents. Such a money is known as token money. Our rupees as well as all our currency notes are token money. Before 1931, pound sovereign was standard money in England. Then its market value and the value of its contents used to be equal. It was a full-bodied money. In India of today, there is no full-bodied money.

*Representative money.* All our currency notes are acknowledgments of debt. They are IOU's. The debt owing entity is the Reserve Bank which is an organ of the government. So the currency notes are debts owing by the State. But the government has declared them as legal tenders so that these acknowledgments of debt are used for settlement of transactions. They are called representative money.

*Bank money.* There may be acknowledgments of debt by banks. If they begin to be used as money, they will be bank money. For instance, if a bank prints notes and they begin to circulate as money,

they will constitute bank money. Such notes are now rare. Some people say that cheques, when they pass from hand to hand, become money. This is erroneous. Cheques are only instruments for transferring bank deposits. When cheques pass from hand to hand it is not cheques but bank deposits which are being paid and accepted. Hence bank deposits, and not cheques, constitute bank money.

*Commodity money and fiat money.* Lastly we may distinguish between commodity money and fiat money. A full bodied legal tender is commodity money, because its value remains fixed in terms of the material of which it is made. With a rise or fall in the value of the material, its value also rises or falls proportionately.

Money itself may be made of a cheap material but, if the issuing authority undertakes to exchange it for a fixed quantity of some precious material, then, though money is token or managed money, yet for all practical purposes it is commodity money.

On the other hand, if the value of money is not kept fixed in terms of any material, it is fiat money. Market value of fiat money is determined by the demand for and supply of money and not by the value of its contents.

CHAPTER XXV

## THE BANKING SYSTEM

### SOME IMPORTANT TERMS

In the study of the role played by banks in the economy of a country, we have to make use of a number of commercial terms. We start with explaining some of these.

1. *Bank deposits.* Sums standing to the credits of individuals and firms (and even public authorities), with banks are called bank deposits. Deposits which are secured by paying in money, or titles to money, are called cash deposits. If a sum is lent by a bank and is not paid in cash but is credited to the account of the borrower, the deposit thus created is called a credit deposit. Bank deposits may also be classified on the basis of terms of withdrawal. They would then fall into three categories; *i.e.*, fixed deposits, savings deposits, and current deposits. Fixed deposits cannot be withdrawn during a period agreed upon in advance.<sup>1</sup> In the case of savings deposits there is a limit placed on the amount which can be withdrawn or the number of times withdrawals can be made in a week. There are no restrictions on withdrawals from current deposits. Rate of interest on fixed deposits is high, on savings deposits moderate, and on current deposits very low or even zero. While a cash deposit may fall in any one of these categories, credit deposits are almost invariably current deposits.

It is sometimes helpful to divide deposits into demand deposits and time deposits. The amount in a demand deposit is payable on demand while that in a time deposit becomes payable on or after a fixed date. Obviously, all current deposits are of the former class while all fixed deposits are time deposits. Savings deposits are divided between the two heads according to the rules of the banks in respect of withdrawals from them.

2. *Cheques.* A cheque is an instrument by which withdrawals are made from bank deposits. It may be defined as the order of a depositor to his bank to make a specified payment in a specified manner. Cheques may be classified according to the manner of payment specified. If the sum is payable to anybody who presents the cheque, it is a bearer's cheque. If it is payable to a specified person or his endorsee, it is an order cheque. Lastly, if the amount is not payable cash but is to be credited to a bank account, it is a crossed cheque.

<sup>1</sup> Some banks allow withdrawals from fixed deposits if notice of such withdrawal is given sufficient time in advance.

**3 Overdraft** An overdraft refers to the act of overdrawing It also means the amount by which a cheque (or cheques) drawn by a depositor exceeds the amount standing to his credit Overdraft facility is a mutual arrangement between a depositor and his bank by which the former is allowed to overdraw This facility is extended either to those firms which are considered sound by the bank or to those who supply some negotiable security

**4 Bill of exchange** It is an order of a creditor (generally a seller) upon a debtor (generally a buyer) to make a specified payment in a specified manner The debtor is known as a drawee He must accept his responsibility for payment by writing the word 'accepted' on it Once this is done it becomes a written promise by him to make the specified payment on the specified date It then becomes negotiable It is usual to get a bill of exchange guaranteed by some firm of repute so as to increase its marketability

### IMPORTANCE OF BANK DEPOSITS

*Banks are traders as well as creators of money* Those firms with which people deposit their savings or other cash holdings and from which people borrow for various purposes, are called financial institutions Investment houses finance corporations insurance companies, co-operative credit societies and banks—these are all institutions of this category because they trade in money Banks are, however, different from other financial institutions in one very important respect We have pointed out in the last chapter that bank deposits form a part of aggregate circulating media They are money because they are used for meeting business obligations Now, bank deposits are the debts owing by the banks to the people It is thus the debts of banks only which can be used as money As we shall see presently, banks have the power of increasing deposits with themselves Hence, while like other financial institutions they are traders in money, unlike them they are creators of money also

This is the vital point of distinction between banks and other financial institutions The IOU's of a co-operative credit society, for instance, are not circulating media those of a bank are We may, therefore, define banks as financial institutions whose debts are used and accepted by the people in settlement of business obligations

It may be objected that it is not correct to treat all bank deposits as money because, though they are available to the public for paying off business obligations, it is not certain that they are thus used Fixed deposits cannot be for this purpose used Only a proportion of savings deposits can be used And it is rare that every depositor uses his whole current deposit at any time The objection is valid so far as time deposits are concerned But it has no validity in respect of demand deposits All that can be used as money, is money Even some currency notes continue to be in the cash boxes of the people and are not used for business purposes Yet they are money by any definition All demand deposits of banks are, therefore, money whether they are being actively used or not

*Place of bank money in total money.* The proportion of bank deposits to total money available to the public varies from country to country.<sup>2</sup> In advanced countries like England, they are by far the most important ingredient in the total supply of money. Consider, for instance, the following position :

TABLE 25-a  
Money Supply with the Public in Great Britain.<sup>3</sup>  
October 1949

			£ Millions
Notes with the public	...	...	1100 (Approx.)
Coins	...	...	160 (,,)
Bank deposits	...	...	5700 (,,)
Total			<u>6960 (Approx.)</u>

Thus bank deposits formed about 82 per cent of the total money supply with the public. In underdeveloped countries, like India, bank deposits play a much less important role. Given below are the figures for this country as in March, 1956.

TABLE 25-b  
Money Supply with the Public in India  
March 1956

		Rs. Crores
Currency with the public	...	1505 (Approx.)
Bank deposits	...	679 (,,)
Total		<u>2184 (Approx.)</u>

Here we find that bank deposits formed only about 31 per cent of the total money available for use to the public. However, variations in the quantity of bank money have their importance even in a country like ours. For instance, if the currency authority in India is making increasing amounts of State money available to the public their purpose for so doing may be defeated if the banks are at the same time reducing deposits. It is, therefore, as necessary in India as in England that banking policy conforms in its direction to the policy of monetary authority.

#### FUNCTIONS OF A BANK

*Non-banking functions.* Banks perform a large variety of functions. These functions may be broadly divided into banking functions and

2 It also varies from time to time in the same country.

3 Figures given are not exact but they are not far removed from actuals.

non-banking functions. Non banking functions refer to those services which the banks render to their clients not as banks but as profit seeking firms. These functions, therefore, do not fall within the purview of banking proper. Thus, banks may undertake to make purchases and sales of shares, bonds, securities, precious metals, etc., on behalf of their clients. Similarly, they may undertake to be the "watchmen" of valuables, executors of wills and administrators of family trusts. They may collect or pay bills, dividends, insurance premia, and the like. They may also undertake to make arrangements for travel to advise their customers in matters of investments etc etc.

*Exchanging money claims* Among the banking functions are generally included acceptance of deposits, giving loans and advances, discounting bills of exchange, and transferring money from one place to another.

1 *Accepting deposits* As we have already pointed out, deposits differ from one another in respect of facilities for withdrawal and of rate of interest. People make their choice from among the various kinds on the basis of requirements of their families and business.

2 *Loans and advances* Advances may be made to clients by the loan system or the overdraft system. The former is simpler. An amount is placed to the credit of the borrower who can withdraw the whole or a part of it as and when he likes. But for the period that the loan is not repaid, he pays interest on the whole sum, whether he makes use of it or not. Overdraft facility, on the other hand, means allowing a client to draw cheques in excess of the amount standing to his credit. Interest payable to the bank is only on the amount actually utilised.

3 *Discounting bills of exchange* It is, technically speaking, purchasing a future claim of money. In essence, however, it means advancing a loan against a promise of repayment in future. An essential difference between advancing a loan and discounting a bill of exchange is that in the case of the latter the bank is certain that money is used for genuine trade purposes.

4 *Transfer of money* Money may be transferred from one place to another by a bank draft or an advice or a cheque. Suppose a person desires to send money from Delhi to Bombay. He may give the sum (and some commission) to a bank at Delhi, and receive a bank draft (i.e., an order) upon its correspondent in Bombay. The sum will be received by the payee in Bombay by presenting the draft to the correspondent. Or, the bank may be asked to write to its correspondent in Bombay to pay the sum to the payee. This is the method of advice. The third method is that a cheque is drawn on the bank in Delhi and it is sent to the payee, who can hand it over to some bank there for collection.

All the above banking functions can be summed up in a single function, *viz.*, that the banks exchange money claims. For instance, when a bank accepts a deposit, it exchanges present money for future money. Similarly, when a bank advances a loan or discounts a bill, it is exchanging future money for present money. Transfer of money from one place to another is the exchange of a money claim at one place for a money claim at another place.

5. *The basic function.* Exchange of money claims, by itself, does not entitle banks to any special place among financial institutions. As we have already noted, other financial institutions also trade in money. For example, a co-operative building society accepts deposits and advances loans. It deals in money claims. Yet it is only a financial institution. It is not a banking institution, because it is only a trader in money: it is not a manufacturer of money. The most important banking function, therefore, is to create deposits. It is this function which distinguishes it from other financial institutions. We must now study how banks actually create deposits. This brings us to the principle of banking.

#### PRINCIPLE OF BANKING

*Assumptions.* Let us set aside the distinction between different kinds of deposits and assume that all deposits are current deposits, that is, they are withdrawable without any restriction. Also, assume that the banks have no capital of their own.

*The problem.* Now, suppose a bank accepts deposits from the people and keeps their money in a safe place so that the whole amount is available, every and any moment, for payment. How will the bank, then, meet its expenses of establishment? One method is that the bank tells the clients that it is rendering them a safe deposit service for which it is entitled to some payment. The rate of interest will, then, be negative. This was the case in the early stages of banking. But the "bank" was then not a banker, it was a goldsmith. To-day the situation is different. The bank finds that the depositors would not only not pay any charges, on the other hand, they expect a return.

*The solution.* The solution lies in the fact that the bank can make some use of a proportion of the money deposited with it. It can lend out or invest it. Every bank has known it from experience that even when depositors are given complete liberty to withdraw their deposits as and when they desire, at no time do all of them come to demand their money back. What really happens on any given day is this. Some depositors might come to withdraw the whole money, some of them withdraw a part of their deposits, some do not come at all, and some of them, as well as some new ones, come deposit more. Thus, the bank has noticed that, a of money held by it is flowing out but some new money is flowing in.

If the inflows of money preceded as well as equalled the outflows, the bank could utilise the whole cash with which it started the day. But that does not happen. Sometimes the outflows exceed the inflows. Even if the outflows are less than the inflows, every outflow may not be preceded by an equal inflow. Hence some cash is required to ensure prompt payments of withdrawals. The bank need not keep in cash as much as its total liabilities but it must keep a proportion of it in cash. The balance can be lent.

The minimum proportion of cash to total deposits, which is essential to ensure prompt payments is known as safe cash ratio. The safe cash ratio depends on a number of factors. In the first place, it depends on the banking habits of the people which in its turn, depends on the existence or absence of a money market, wealth of business classes, traditions of the people, and the general commercial structure of the country. In rich and advanced countries banking system is well developed and is widely made use of. The larger the number of people who keep bank accounts the smaller the percentage of cheques presented for cash payment. The safe cash ratio also depends on the general state of confidence and trust among the people. In periods of war, people's confidence in economic and political stability is shaken and more demands are made on the banks for cash. Banks have to keep more cash. Safe cash ratio for a bank also depends on its individual reputation and standing. Safe cash ratio for a 'baby' bank is higher than that for an established one.

Suppose that safe cash ratio for a bank is 10 per cent. Further suppose that the total cash deposits with it stand at one lakh rupees. It will then require a cash of the order of ten thousand rupees. The balance of ninety thousand rupees can be lent out or invested. It is out of the earnings on this amount that the expenses, including interest to depositors, are paid. The solution has been found.

The story is, however, not yet complete. The bank can, in fact take a long step further. As a rule, a bank does not lend out in cash. It only creates credit deposits in the name of the borrowers and allows them to draw cheques on it. Now, the bank has known that it can allow full liberty to depositors to draw cheques and, yet, a cash of ten thousand is enough against a liability of one lakh. It obviously means that the balance of ninety thousand would be enough against a liability of nine lakhs, as is obvious from the following table—

TABLE 25 e

Safe Cash Ratio	Actual Cash (Rs.)	Liability it can meet (Rs.)
10	10,000	1,00,000
10	90,000	9,00,000

Hence what the bank is actually in a position to lend is, not ninety thousand, but nine lakh rupees. Actual cash is one lakh rupees.

Total deposits with the bank become ten lakh rupees. Nine lakh rupees worth of credit has been created. No wonder then that banks have been called factories which manufacture credit.

*Possible objections.* Three doubts are possible to arise. It may be asked, firstly, that when the liability becomes ten lakh rupees, how it can be met by just one lakh rupees. The answer has already been given. It is possible because cheques are drawn to the extent of only a proportion of the total liability. Some of these cheques entail only book transfers, and if some money flows out, some money also flows in.

Secondly, it may be objected that if the bank does take upon itself the liability of ten lakh rupees, it becomes insolvent because its asset is only one lakh rupees while the liability is ten lakh rupees. This objection is based upon miscalculation. The bank's balance-sheet would still be even as shown below—

TABLE 25-d

Liabilities (Rs.)		Assets (Rs.)	
Cash deposits	1,00,000	Cash in hand	1,00,000
Credit deposits	9,00,000	Advances	9,00,000
Total	10,00,000	Total	10,00,000

The objection does not take into account the fact that when a credit deposit is made in the account of the borrower, it at once creates a liability as well as an asset. Liability takes the form of deposit and asset takes the form of loan.

The third objection might be that a bank is, after all, a shop which sells loans. And a shopkeeper cannot sell if the buyers will not purchase. It is not enough that a bank decides to make more advances to the people. The people must also be prepared to borrow more. The answer is simple. A bank is, of course, a shop but a shopkeeper can induce the buyers to purchase more by reducing the price or by making his commodity otherwise more attractive. Quite similarly, a bank can induce more persons to borrow from it by lowering the price (rate of interest) of its loans, or by extending other facilities like less collateral security, repayment by instalments, etc., etc. Moreover, advancing loans directly to clients is not the only method by which a bank can create credit. It may purchase bills, government securities, or even immovable property, and make payments by cheque upon itself. It may be further objected in this connection that in a period of depression, when people's confidence in business is low, cheques may be immediately presented for encashment. In such a period, even a lower rate of interest may fail to attract borrowers.

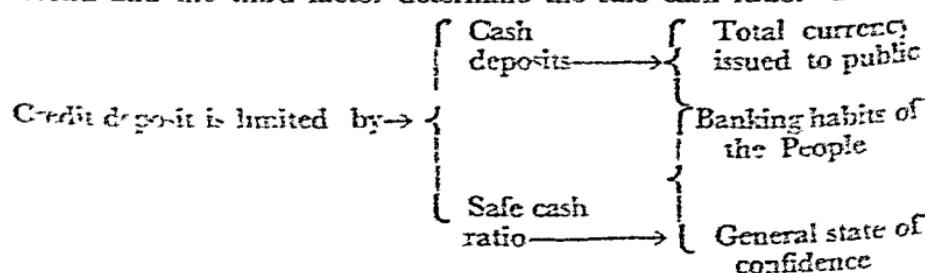
cash deposit. The balance of cash is smaller. And the credit deposit which can be created against this is smaller still because the safe cash ratio is high. Given the cash deposits, credit varies inversely with safe cash ratio. The higher the latter, the less is the bank's power to create credit.

In situation c., safe cash ratio is the same as in case (b), but the cash deposit is lower. Once again we find that comparatively less credit deposits can be created. The power of a bank to create credit thus varies directly with cash deposits.

*Determinants of cash deposits.* We find then the power of a bank to create credit is a function of two factors, viz., cash deposits and safe cash ratio. The amount of cash, which people are likely to deposit with the banks, depends on the total amount of currency issued by the Central Bank, and the banking habits of the people. On any given day, the currency issued out by the Central Bank is held between the public and the banks. Given the total quantity, the proportion of it, which the people will keep with the banks, depends on the monetary habits of the people. When more people have learnt to keep bank accounts, cheques become a more convenient method of making payments and, hence, people require less cash for meeting business obligations. Given the proportion of cash holdings which people will keep in the banks, the amount which they will actually keep in the banks depends on their cash holding. Other things being equal, if more cash is made available to the public, quantity of cash deposited with the banks will also increase, and vice versa.

*Determinants of safe cash ratio.* Level of safe cash ratio, we have seen, depends on banking habits of the people and general state of confidence. The larger the number of bank accounts, the greater the possibility that payments by cheques would entail only book entries and less cash will be required. If public confidence is shaken by, say, a bank failure, pressure on banks increases and the safety level of cash ratio rises.

*Conclusion.* Thus we find that the extent, to which banks can at any time create credit, depends on three factors, viz., the amount of total currency issued to the public, banking habits of the people, and the general state of confidence. It is these three factors which set a limit to their power of creating deposits. The first and the second factors determine the amount of cash with the banks and the second and the third factor determine the safe cash ratio. Hence:



### LIQUIDITY AND PROFITABILITY OF ASSETS

*Two aims.* A bank must always be prepared to meet all calls for money made upon it by the depositors—either depositors as well as credit depositors—as well as by those to whom depositors have issued cheques. It must have the capacity to produce cash on demand. This means that a sufficient proportion of its assets must either consist of cash or must be convertible into money with sufficient readiness at low cost. A bank, therefore, must so conduct its affairs as to maintain liquidity.

No less an important consideration than maintenance of liquidity, is that of income. The aim of every bank is not only to cover its expenses, but also to make maximum profits. It endeavours to keep its assets in such forms as yield maximum income.

*Clash between the aims.* The most liquid of all assets is money itself. If a bank were to attend exclusively to the objective of maintaining liquidity, it would keep all its assets in the form of money. But money is the most barren of all investments because it does not yield any income whatsoever. On the other hand, if the bank were to keep its assets in the form of long term loans income from the assets would be high, but liquidity would be very low. Liquidity and income yielding capacity are the two opposite criteria for every bank on the basis of which it has to decide the nature of its assets. The more liquid the assets, the less income-yielding will they be and vice versa. The secret of success for a bank lies in striking a sound balance between liquidity and profitability.

Every bank divides its assets into funds of various degrees of liquidity. Some of its assets are kept in the form of cash which is very liquid, though non-income-yielding. Some assets take the form of property which is of low liquidity but yields good income. In between the two lie other assets with different degrees of liquidity and income-yielding capacity.

### BALANCE SHEET OF A BANK

The balance-sheet of a firm shows its liabilities and assets at a given point of time. It gives an idea of the nature and prosperity (or otherwise) of the firm. The balance-sheet of a bank is no exception to this. But its study is instructive for another reason. It reveals in what forms the bank is keeping its assets. We get an idea of the form in which various degrees of liquidity and profitableness are being maintained. We give below the position of Indian Industrial banking.

Table 25-f

*Consolidated Position of Indian Scheduled Banks (94 Banks)*

Rs. Crores

<u>Liabilities</u>		<u>Assets</u>	
(1) Share capital and reserves	70	(5) Cash in hand	37
(2) Demand deposits	476	(6) Balance with the Reserve Bank	49
(3) Time deposits	345	(7) Money at call and short notice	22
(4) Liabilities to other banks	29	(8) Bills discounted and purchased	60
		(9) Loans and Advances	372
		(10) Government Securities	336
		(11) Other investments	27

*Liabilities.* Liabilities side is quite simple. First of all, there is liability to the shareholders. It consists of the share capital subscribed by them and the reserves which are undistributed profits. Deposits are a liability to the public. Liabilities to other banks include mainly borrowings from the Reserve Bank and the State Bank of India.

*Assets—* a) *Cash.* As pointed out above, it is the study of the assets which the economist finds instructive. Cash in hand consists of State money, i.e., coins and notes.<sup>5</sup> coins form a small proportion of the cash. Hence cash in hand consists mainly of currency notes which are IOU's of the Reserve Bank of India. Deposits with the Reserve Bank of India are also the latter's IOU's and are encashable on demand. Both these, therefore, can be treated as equivalents. That is exactly what is done in practice. IOU's of the Reserve Bank, along with coins held, constitute the cash with the banks. In the statement above, items (5) and (6) together form approximately 10·5% of the total liabilities to the public which are given by items (2) and (3). This is the cash ratio to liabilities.<sup>6</sup>

In England, the usual ratio of cash to liabilities, is 8%, of which usually one-half is deposited with the Bank of England and the other half is notes and coins.<sup>7</sup>

<sup>4</sup> Total assets do not equal total liabilities, because the figures do not cover the whole area of operation of the banks. Moreover, the figures have been rounded off.

<sup>5</sup> Here we include rupee notes in coins because they are rupee coinage and not convertible legal tender.

<sup>6</sup> Thus the term cash is used here in a specific sense. It signifies coins, notes, and deposits with the Central Bank of the country.

<sup>7</sup> Banks submit to the Central Bank returns pertaining to a specific day in the week. It is usual with them to call some cash from outside to show a higher cash ratio. In other words, actual cash ratio is lower than the one which we know from published figures. The act of calling in cash, just to show a higher cash ratio in returns, is called *window-dressing*.

(b) *Money at call* Item (6), i.e., money at call and short notice includes three items. First, there are cheques in the course of collections. Secondly, there are demand deposits with other banks. These two are evidently little removed from cash. We also include in this head sums which are repayable at a short notice. Liquidity of this item of assets is very high.

(c) *Bills* Bills purchased are treasury bills and bills discounted are bills of exchange. Treasury bills represent short term loans to the government payable usually after three months. These are saleable in the market. Bills of exchange are like post dated cheques, which become payable when they mature. Their period of maturity varies from one to three months. But since there is always a ready market where bills can be sold and also since bills can be got rediscounted with the Central Bank of the country, they are more quickly and easily convertible into cash than appears at first sight.

(d) *Advances and loans* Advances are loans to the people. Commercial banks do not as a rule give long term loans. Their period is rarely more than a year. Generally the banks insure against non repayment by keeping some collateral security. In case, however, the debtor gets into some difficulty, recovery of loan money from him even by the sale of his goods, takes time. Hence their liquidity is less than that of the bills.

(e) *Shares and property* Lastly there are investments in government securities, in shares and in property etc. Government securities find a ready market but their prices are variable. Indian banks very sparingly invest in shares of corporations. Investment in property is the least liquid of all assets especially because if confidence of the people in a bank is shaken sale of property by it aggravates the situation still further.

It must be noted that we cannot be dogmatic about the order in which different kinds of assets can be placed in order of liquidity. For instance, on a given date a ten year government security may be maturing after one month. It will, then, be more liquid than a three month treasury bill in the case of which only one month has elapsed.

## CHAPTER XXVI

### VALUE OF MONEY

#### MEANING OF VALUE OF MONEY

*Intrinsic Value.* The term value of money may be employed to mean its value of the contents of money. Employed thus, the term refers to its intrinsic value. When we say that a rupee coin is worth only four annas, we are speaking of the intrinsic value of money. For, what we mean to convey is that if somehow rupee stopped to be legal tender, its metal contents would be worth four annas only. Evidently, currency notes have very low intrinsic value.

*Market value or purchasing power.* Economists generally use the term value of money to mean its market value. In this sense, the value of money is its purchasing power, that is, the amount of goods and services in general which a unit of money can command. In the rest of this chapter we shall use the phrase value of money in this sense only.

It is usual to measure or express prices of goods and services in terms of money. Money is the common denominator for comparisons of their values. In what terms do we express the value of money? We can do it only in terms of goods and services. But no single commodity, or group of commodities, is appropriate to indicate the value of money. It has, therefore, to be expressed in terms of all goods and services taken together. In the definition of market value of money we have italicised the phrase "in general". The importance of that phrase is now evident.

*Value of money and price level.* Value of money is its general purchasing power. The larger the quantities of goods and services which a unit of money can buy, the higher is its value and vice versa. When prices are low, a given sum of money can purchase more goods, and, therefore, its value is high. Conversely, when prices rise, the same sum of money can command less goods and services and its value is low. Value of money is thus the reciprocal of the general level of prices. A rise in the latter is synonymous with a fall, and fall is synonymous with a rise, in the value of money. If the general price level doubles, the value of money is halved; if the former trebles, the latter is one-third of its original value and so on.

As pointed out above, value of money refers to its command over goods in general and not any particular commodity or commodities. In a period, when prices in general are rising, all prices do not rise equally. Some prices rise more than others. In fact some prices may not rise at all and some prices may actually fall. We must take into account all these facts to arrive at the conclusion in what direction the general price level, or the value of money, has changed and how much is the change.

## MEASUREMENT OF CHANGES IN THE VALUE OF MONEY

*Non measurability of value of money.* Can we measure the value of money? This question comes to be the same as another question can we measure the general level of prices? If we can measure the general level of prices, the reciprocal of this measure would give the value of money. That is, if the general level of prices is  $x$ , the value of money would be  $1/x$ .

Unfortunately, however, we cannot measure the general level of prices. The difficulty lies in finding out a unit of measurement and the difficulty is insurmountable. Of course, price level cannot be expressed in physical units like yards, maunds, or cubic feet. The only possible medium could be money. But, while prices of individual commodities can be expressed in terms of money, general level of prices cannot be so done. This is so because generally an appropriate measure can be found for a unit of a commodity, but there is no unit of measurement appropriate for goods and services in general. To be more concrete, we can, for instance, speak in terms of one cow, one yard of cloth, or one maund of wheat and state their prices. But goods and services in general can neither be expressed as so many in number, nor as so many yards, nor as so many maunds, and consequently the general level of prices does not have any medium to be expressed in.

*Measurability of changes.* There is one escape from the above difficulty. We may leave the question of measuring the value of money and attempt to measure changes in its value. This is possible because changes can easily be expressed as percentages.

Changes in the price level would be very easy to measure if all prices rose and fell equally. We could then take up any single commodity and find out the extent of change in its price which would also be the measure of the extent of change in the general price level. Even if all prices rose and fell together but unequally we could know the direction of change from any single price. As it happens, all prices do not change equally and it is not certain that all change in the same direction. We have, therefore, to employ a complicated method for measuring changes in the price level. It is known as the method of index numbers. Index numbers may in this context be defined as the numbers indicative of the comparative levels of prices at different points of time (or places). Let us now proceed to study the method of forming index numbers.

### FORMATION OF SIMPLE INDEX NUMBERS

*The base year.* Index numbers help to compare price levels. It is essential for comparison that there is a standard to compare with. First step in the formation of index numbers, therefore, is to select a year, the price level of which is treated as a standard for comparison. Such a year is called the base year. It is usual to define a base year as a

year of normal prices i.e., a year in which price level is neither high nor low. But to decide whether a price level is high or low means, once again, comparison. There is no single price level which is universally agreed upon as a normal price level. Index numbers have been formed with 1900, 1913, 1927, 1939 and 1945, as base years and yet price levels in these years were very different. Hence, if we define base year as a year of normal price level, we needlessly land ourselves in a difficulty. It is, therefore, preferable to define a base year as the year comparisons with which carry significance. For instance, we choose 1939 as the base year to study changes during and since the war. If we take 1948 as the base year, index numbers will indicate trends since independence. Similarly, with 1951 as the base year, index numbers will measure changes during the period of Planning.

*The procedure.* The method of constructing index numbers may now be described briefly.<sup>1</sup> Suppose, 1939 is the base year and 1943 is the year for which index number is to be constructed. A list of relevant commodities is prepared. Their prices in 1939 as well as in 1943, are ascertained. Every price in the base year, i.e., 1939, is then represented by one hundred and the corresponding representative number for every price in the year in question, i.e., 1943, is calculated.<sup>2</sup> Averages for the numbers thus obtained are struck. Average for the base year will, obviously, be hundred. The corresponding average for 1943, gives the index number for that year with reference to 1939 as the base year. Let us illustrate the procedure. Consider the following table<sup>3</sup>:—

TABLE 26-a

Items	1939		1943	
	Price per unit Rs.	Representative number	Price per unit Rs.	Representative Number
A	2	100	4	200
B	10	100	11	110

contd. on next page . . .

<sup>1</sup> The reader may find some difficulty in understanding the procedure from this description. The difficulty will resolve itself as he passes on to the illustration which follows.

<sup>2</sup> It is customary to represent every price in the base year by 100. This facilitates calculation of percentage change. There will, however, be no material difference if every price in the base year is represented by unity and

<sup>3</sup> price in the year in question by a corresponding fraction.

<sup>4</sup> is to illustrate the method.

Item	1939		1943		Represen-ta-tive number
	Price per unit Rs.	Represen-ta-tive number	Price per unit Rs.	Represen-ta-tive number	
C	12	100	15	125	
D	3	100	6	200	
E	5	100	3	60	
F	20	100	16	80	
G	4	100	3	75	
H	8	100	12	150	
Total	800		960		
Average	100		120		

Price per unit of A is Rs. 2/- in 1939 and Rs. 4/- in 1943. As we represent the price in 1939 by 100, the corresponding representative number for 1943, is 200. Similarly, price per unit of B is Rs. 10/- in 1939 and Rs. 11/- in 1943. The latter is represented by 110, as the former is represented by 100. Thus proceeding we find the representative numbers for prices of various commodities. Averages are then struck. The average for 1943 is 120, which shows that price level in 1943 was 20 per cent higher than in 1939.

#### WEIGHTED INDEX NUMBERS

Shortcoming of simple index numbers. We have explained the method by which simple index numbers are constructed. These index numbers attach the same importance to all items. But, in fact, different items are of unequal importance. Their relative importance is to be gauged from the purpose for which index numbers are constructed. Non-recognition of the fact of unequal importance robs simple index numbers of their usefulness as index numbers. Let us illustrate the point by considering the case of cost of living index numbers.

Let us imagine that there is a group of workers employed in a firm where there is a uniform wage rate of Rs. 100/- per month. Further suppose that every one of them is spending his entire income

on two items only, call them *A* and *B*. Lastly, suppose that the income is divided between the two items in the ratio of 20: 80. Let us now see how changes in prices affect their budgets and whether our simple index number really indicates this effect.

Suppose the price of *A* rises by 50 per cent while that of *B* remains unchanged. Our index number will be 125, for:

TALE 26-b

Commodity	Representative number before change	Representative number after change	
		Rs.	Rs.
A	100		150
B	100		100
Total	200		250
Average	100		125

Thus our index number indicates that the workers will be neither better nor worse off if their wages are raised by 25 per cent, i.e., to Rs. 125/- . On examination, however, we find that this is not correct. If every worker continues to consume the same quantities of *A* and *B*, the statement of expenditure will be as under:

TABLE 26-c

	Expenditure before the change	Expenditure after the change	
		Rs.	Rs.
On <i>A</i>	20		30
On <i>B</i>	80		80
Total	100		110

Thus actual rise in the cost of living is 10 per cent only. Simple index number gives an exaggerated view of the change. Similarly if the price of *B* rises by 50 per cent while that of *A* remains unchanged, simple index number will show a rise of 25 per cent while the actual rise in the cost of living will be 40 per cent.

**Weights.** The discrepancy can be removed by attaching different importance to the various items in accordance with the place they occupy in the budgets of the workers. The importance

thus attached is called weightage. In the above example, item *B* is four times as important as item *A*. Its weightage will, therefore, be four if the weightage of *A* is one. The index numbers calculated on this basis are called weighted index numbers. In the above two cases, index numbers will be constructed as under —

TABLE 26 d

Item (1)	Weightage (2)	Representative number before change (3)	Representative number after change (4)	Weighted representative no before change (5) (2×3)	Weighted representative no after change (6) (3×4)
Case I					
A	1	100	150	100	150
B	4	100	100	400	400
			Total	500	550
			Average	100	110
Case II					
A	1	100	100	100	100
B	4	100	150	400	600
			Total	500	700
			Average	100	140

#### DIFFICULTIES OF FORMING INDEX NUMBERS

*Choice of items.* Construction of index numbers presents many difficulties. The first of them lies in deciding upon the list of relevant items, (i.e., "the composite commodity representative of expenditure") of the group of persons under study. Tastes and inclinations differ from person to person. For instance, some like tea and others prefer coffee. Consequently, budgets of the persons constituting the group do not tally. This difficulty can, however, be surmounted by a summation of the budgets of all the individuals or of a sample cross-section of them.

*Choice of prices.* Another difficulty is about prices. Individual generally purchase for consumption at retail prices. But retail prices differ from store to store. Wholesale prices are easier to ascertain but they are irrelevant to cost of living. However, when it is made clear how prices for any series of index numbers were ascertained, the appropriateness, or otherwise, of such a series for any given purpose becomes obvious. It is then possible to make use of index numbers with necessary caution.

*Changes in consumption.* A really formidable difficulty arises when the character of consumption has undergone a change, so that the constituents of budgets at the two points of time differ considerably. Such changes arise on account of changes in tastes, environment, and prices. Two kinds of changes occur:

1. Quantities of some commodities used at the later date are less, of others more.
2. Some commodities which were used in the base year disappear from the budget of the year in question, and some new commodities enter.

Suppose the change in the character of consumption is only of the first type. Then the list of commodities is the same but their weightages in the two periods are unequal. And much can be said in favour of either set of weightages. If weightages are decided upon on the basis of the base year, the index number is called Laspeyres's index number. If the weights are adapted to the pattern of expenditure in the year in question, we get Passche's index number.

When the change in the pattern of expenditure involves a change of the second type, the problem becomes almost insoluble. Composite commodity representative of expenditure in one year becomes irrelevant to the other year. Which composite is then relevant for index numbers, becomes difficult to decide.

#### SUGGESTIONS FOR SURMOUNTING DIFFICULTY OF CHANGES IN CONSUMPTION

Some solutions have been suggested for the difficulty caused by changes in consumption. None of these is completely satisfactory. Nevertheless, a study of them is instructive.

— *Marshall's chain method.* This method assumes that changes from year to year are insignificant, so that they can be ignored.<sup>4</sup> One year may be taken as the base year and the composite commodity relevant to it may, without any fear of serious divergence, be treated as composite commodity relevant to the next or second year. Then, composite relevant to the second year may be treated as relevant to the third year. Treating second year as base year, index number for the third year is found. This index number is then adjusted to the index number

<sup>4</sup> Once again if description of the method is difficult to understand, illustration which follows will be helpful.

of the second year. Similarly, we can proceed on. For instance, suppose  $a_1$ ,  $a_2$ ,  $a_3$ , are the composites (lists of commodities) representative of consumption in years 1939, 1940, and 1941, respectively. Let the prices be as under —

TABLE 26-c

	Composite	Year	Price (Rs.)
I	$a_1$	{ 1939	40
		{ 1940	60
II	$a_2$	{ 1940	45
		{ 1941	54
III	$a_3$	{ 1941	40
		{ 1942	50

Taking set of figures I and treating 1939, as base,  
index number for 1940 =  $\frac{60 \times 100}{40} = 150$

Taking set of figures II and treating 1940 as base,  
index number for 1941 =  $\frac{54 \times 100}{45} = 120$

But with 1939, as base year index number for 1940 is 150 Hence  
with 1939 as base year

Index number for 1941 =  $\frac{120 \times 100}{100} = 180$

Now, taking set of figures III and treating 1941 as base  
Index number for 1942 =  $\frac{50 \times 100}{40} = 125$

With 1939 as base year,  
index number for 1942 =  $\frac{125 \times 100}{100} = 225$

The real difficulty with this method is that it assumes that small errors are not cumulative. Between any two successive years, change in the pattern of expenditure may be small and hence ignorable. But as we repeat the process over a number of years, the degree of error goes on increasing. Thus, price levels in two distant years may be the same, but if we calculate index numbers for them by this method, they are almost certain to come out unequal.

*Keynes' direct method of comparison* Keynes introduces the concept of similar persons. Two persons of equal sensitiveness are similar if they enjoy equal real incomes of utility, i.e., the utilities which they derive from their incomes are equal. This does not mean that they consume the same articles. Only aggregates of utilities of commodities, which they purchase, are equal.

Comparisons of purchasing power of money are the same thing as comparisons of money incomes of similar persons. For instance, suppose that in the year 1939, a person was enjoying a given real income of utility with a money income of Rs. 200/- and that he, or another persons of equal sensitiveness, enjoyed in 1943, the same utility with a money income of Rs. 500/-. Then treating 1939 as the base year, index number for 1943 is  $\frac{500}{200} \times 100 = 250$ . In other words, in 1943, price level was  $2\frac{1}{2}$  times that in 1939.

This method is preferable when the character of consumption has undergone a substantial change. It also comes handy when a substantial proportion of expenditure is on non-standardised goods. But it is, at its best, a rough method. It is difficult to fix upon similar persons because there is no objective test available for the purpose.

*Keynes' highest common factor method.* Lists of commodities constituting composite relevant to consumption in the two periods are drawn. Each list is divided into two parts. In one part are included quantities of various items which are common to the two lists. Call this part *a*. The other part of each list consists of items where there is a difference, call them *b<sub>1</sub>* and *b<sub>2</sub>*. Now, part *a* is widened by finding in *b<sub>1</sub>* and *b<sub>2</sub>* such items as have equal utility and transferring them to part *a*. *b<sub>1</sub>* and *b<sub>2</sub>*, are then ignored. Price of *a* in the two periods is compared to find index numbers. Consider, for instance, the following two lists which represent the consumption of a typical family in two years—say 1939 and 1943 (standard of living remaining the same).

TABLE 26-f

	1939	1943
(1)	3 mds. of wheat	3 mds. of wheat
(2)	2 „ „ sugar	1½ „ „ sugar
(3)	1½ „ „ milk	2 „ „ milk
(4)	2 lbs. „ tea	3½ lbs. „ coffee

Now, 3 mds. of wheat are common to both the lists. This item will be included in *a*. Also, 1½ mds. of sugar and 1½ mds. of milk will be included in *a*. Now, suppose that 2 lbs. of tea give the same satisfaction as 1½ lbs. of coffee and that the former cost less than the latter in 1939, but the latter cost less than the former in 1943, then two lbs. of tea would be included in *a* of 1939 and 1½ lbs. of coffee in *a* of 1943.

Finding out similar pairs of commodities and transferring them from *b<sub>1</sub>* and *b<sub>2</sub>* to *a* is the essential feature of this method. As many items are thus transferred as possible. *a* thus comes to represent the highest common factor in the two composites. Comparing the prices in the two years, we find the index number.

This method has its own demerits. The essential step here is the widening of sphere of a. This is done by fixing upon pairs of commodities which give equal satisfaction. But equal satisfaction to whom? After all index numbers are calculated in respect of groups of persons and not individuals. And within a group tastes differ. Once again, there is no objective test of finding out what quantities of two commodities will give equal satisfaction to a group of persons.

### INDEX NUMBERS AND NATIONAL DIVIDEND

*Interrelation.* It was pointed out in Chapter VIII that changes in the value of money introduce complications into measurement of national dividend. National dividends in different years have not only to be expressed in terms of money value, but also for purposes of comparison, they have to be deflated to a common level of prices. This deflation is done on the basis of index numbers. Hence problems of index numbers are also the problems of measurement of national dividend.

We have now seen that the main difficulty in the calculation of index numbers arises from changes in the pattern of consumption. We have also discussed the various solutions which have been suggested. A suggestion by Professor Hicks in respect of interpretation of changes in the national dividend deserves to be stated.

*Hick's suggestion.* Take two years—year I and year II. Also, let national dividend be measured on the basis of expenditure by individuals and the government. Now if increase in this aggregate expenditure is more than the rise in the index number, national dividend will have increased and vice versa. For instance suppose the aggregate money expenditure in year II is twice the same in year I. Taking year I as the base, if index number for year II is above 200, national dividend has decreased. And if it is below 200, national dividend in year II is greater than in year I. To be concrete, let index number for year II be 400. Then national dividend in year II is half that in year I. Similarly, if it is 300, national dividend in year II is 2/3rds of the same in year I. So on and so forth.

That is not all, however. In computing the index numbers, the question of weightage has to be decided. Shall we calculate weightages on the basis of expenditure in year I or in year II? In other words shall we use the Laspeyres' index number or the Paasche's. As has already been observed, choice between the two is rather difficult. And the two methods may not yield the same results. Hick's solution is as under.

1. If increase in aggregate money expenditure is more than the rise in Laspeyres' as well as Paasche's index numbers, national income has undoubtedly risen.

2. If increase in money expenditure is less than that in both the indices, national income has certainly decreased.

3. If aggregate money expenditure has increased, but the increase is less than that in one index and more than that in the other, it is not possible to say with certainty whether national income has increased or decreased.

### QUANTITY THEORY OF MONEY

A theory, purporting to explain how value of money is determined, is found in the writings of David Hume and Jean Bodin. It was correctly assigned the name of quantity theory of money. In recent times, the original crude form has been sought to be refined. Consequently, two forms of it have emerged. For distinction they have been given the names of Cash-transactions version and Cash-balances version of quantity theory. The refinements introduced have rendered the name "quantity theory," inappropriate, though it continues to be applied even today.

1. Crude version. Money by itself is not useful; it is, therefore, not demanded for its own sake. It only represents purchasing power, and, hence, is acquired to part with, sooner or later, in exchange for goods. Hence the purchasing power or value of money depends upon two factors, viz., the quantity of money and the things to be purchased with it. Given the quantity of things to be purchased, the larger the quantity of money, the higher will be the prices in general and the lower will be the value per unit of money and *vise versa*. Hence the value of money is inversely related to the quantity of money.

2. Cash-transactions version. Irving Fisher has been the most important advocate of this version.<sup>5</sup> According to him, there are three determinants of the value of money;

- (a) the quantity of money in circulation;
- (b) its "efficiency" or velocity of circulation (or the average number of times a unit of money is exchanged for goods in a year);
- (c) the volume of trade (or amounts of goods per year bought for money).

Their relation to the value of money—or, better, to the general level of prices—can be explained with the help of the equation of exchange.<sup>6</sup> Let us start with a single transaction. Suppose an individual purchases 10 seers of cheese at 3 rupees per seer. In this transaction 30 rupees are equivalent to 10 seers of cheese. Thus,

$$30 \text{ (rupees)} = 10 \text{ (seers of cheese)} \times 3 \text{ (rupees per seer)}$$

<sup>5</sup> Our discussion of his version is based on Chapter VIII of his book "*Elementary Principles Of Economics*", 1912.

<sup>6</sup> Fisher defines the equation of exchange as "a statement in mathematical ... of the total transactions effected in a certain period in a community"., p. 152.

If we express all transactions effected in a given period in the same manner and then add them all together, we get an equation of exchange for the community for that period. The left hand side of the equation will then represent all the money spent and the right hand side will give the value of goods purchased in that period. The two must obviously be equal.

Let us take up the left hand side for further explanation. Money expenditure is not the same thing as quantity of money in circulation. This quantity is only one element of money expenditure. If a unit of money, during the period under consideration, is used ten times for making purchases, then total money expenditure is ten times the quantity of money. The number of times a unit of money changes hands during a period is called velocity of circulation or efficiency of money. Thus velocity of circulation is the rapidity with which money changes hands. If every person spends money as soon as he receives it, velocity of circulation is infinitely high. If on the other hand, the recipients of money hold a part or whole of it for some time, the larger the proportion they thus hold, and the longer the period for which they hold it, the lower is the velocity of circulation. Velocity of circulation of money, thus, is in inverse relation to what Professor Chandler has called the 'average interval of rest of money between its receipt and expenditure'.

The total expenditure is thus a product of two factors,—the quantity of money in circulation and its velocity of circulation. If  $M$  is the quantity of money and  $V$  the velocity of its circulation, then money expenditure is given by  $MV$ . Using algebraic language for the right hand side, let us suppose that quantities of commodities are represented  $q_1, q_2, q_3$ , and their respective prices by  $p_1, p_2, p_3$  then,

$$MV = p_1q_1 + p_2q_2 + p_3q_3$$

Employing the greek letter  $\Sigma$  to represent the sum of these terms,

$$MV = \Sigma p_i q_i$$

If we use  $P$  as the average\* of all prices and  $T$  to represent the sum of quantities exchanged, then,

$$MV = PT \text{ or } P = \frac{MV}{T}$$

In other words, price level varies directly as the quantity of money ( $M$ ) and its velocity of circulation ( $V$ ), and varies inversely as the volume of trade ( $T$ ). If we take into account the fact that not only State money but also bank money is used for transactions and that the velocity of circulation of the two kinds of money is generally unequal, then we can modify the above equation into the form

$$P = \frac{M_1 + M_2 V_1}{T}$$

7 An Introduction To Monetary Theory, p. 35

8 Weighted average, to be correct

where,  $P$  is the general level of prices,  
 $M$  is the State money,  
 $V$  is the velocity of circulation of  $M$ ,  
 $M_1$  is bank money.  
 $V_1$  is the velocity of circulation of  $M_1$ ,  
 $T$  is the number of transactions.

Considering once again the simpler equation  $MV=PT$ , it is very easy to show that it represents just a truism.  $MV$  represents the total expenditure of the community during a year. This expenditure is incurred to purchase goods.<sup>9</sup> On the other hand,  $PT$  represents goods purchased and  $P$  the price per unit. Hence  $PT$  is the total value of goods purchased during a period equals the value of goods. Though a truism, yet the equation does bring out what factors determine the price level.

Two facts may be noted. First, there is not a fixed relationship between the quantity of money and the price level. For, in addition to  $M$ ,  $V$  and  $T$  are also determinants of the price level. Hence the price level may change as a result of any one or more of these three factors. Secondly, though Fisher did state that  $P$  varies directly proportionately with  $M$  if  $V$  and  $T$  remain unchanged, yet it does not mean that changes must always originate with  $M$ .  $M$ ,  $V$ , and  $T$  are all determinants of price level and initially the process of change might start with any one of them.)

3. Cash-balances version. Marshall is the author of this version of the theory<sup>10</sup>. According to him, people find it worthwhile to keep a proportion of their income in the form of money (State money as well as bank money). Keeping a part of the income in the form of cash has at once an advantage and a disadvantage. Advantage lies in the fact that possession of money makes purchases easy and smooth and enhances bargaining strength. Disadvantage arises from the fact that money is a barren, non-income-yielding asset, while, if it were invested, it yields an income. Every individual decides upon the appropriate proportion by weighing the advantage against the disadvantage.

"Let us suppose that the inhabitants of a country, taken one with another, find it just worth their while to keep by them on the average ready purchasing power to the extent of a tenth part of their annual income, together with a fiftieth part of their property, then the aggregate value of the currency of the country will tend to be equal to the sum of these amounts."

<sup>9</sup> Of course, the term "goods" is used in a very wide sense and includes services, securities, shares, etc.

<sup>10</sup> *Money, Credit and Commerce*, I, iv.

<sup>11</sup> *Ibid.* I, iv, 3.

Two equations of exchange based on Marshall's statement of the theory will be considered. One has been given by Pigou and the other by Keynes.

(a) *Pigou's equation* Let  $R$  be the real resources enjoyed by the community. Suppose that people to provide themselves with convenience in purchases and security in payment, decide to keep a given proportion of  $R$  in the form of money. Call it  $k$ . Then  $kR$  measures the real resources which people have decided to hold in the form of cash. If  $M$  is the amount of money, then  $kR$  will measure the value of  $M$ . Now, if  $P$  represents *value per unit of money*, then,

$$P = \frac{kR}{M}$$

Further, account has also to be taken of the fact that money available to the public includes not only state money but also bank money against which cheques can be drawn. People keep a proportion of their command over purchasing power in legal tender and the balance in the bank. Let  $c$  represent the proportion kept in legal tender. Then  $(1-c)$  is the proportion which is kept as withdrawable deposits. Now banks keep only a proportion of their liabilities in cash. Let this proportion be  $h$ , then,

$$P = \frac{kR}{M} \left\{ (c + h(1-c)) \right\}$$

(b) *Keynes' equation* The equation given by Keynes is comparatively simpler. According to him, it suits the people to have on hand some purchasing power. The amount of this purchasing power depends partly on their wealth and partly on their habits. Given the wealth and habits of the people, the amount of purchasing power which they desire to hold is given. This purchasing power can be measured in terms of what he calls consumption units. A consumption unit is made up of a collection of specified quantities of their standard articles of consumption or other objects of expenditure."

Suppose people desire to hold  $k$  consumption units in the form of cash. Then the actual amount of money, call it  $n$ , will measure the value of  $k$ . Thus, if  $p$  be the price per consumption unit, then,

$$n = pk, \text{ or, } p = n \cdot \frac{1}{k}$$

Taking into account bank deposits, let us suppose that  $k'$  are the consumption units which people desire to keep in the banks. Let cash ratio of banks to liabilities be  $r$ , then,

$$n = p(k + rk')$$

#### 3. COMPARISON OF THE THREE EQUATIONS OF EXCHANGE

Let us juxtapose the three equations with a view to comparing them. We abstract from the operation of banks because that would

make it easier to compare the fundamentals. Also, as Pigou's equation is in terms of value per unit of money while the other two equations are in terms of price level, we convert Pigou's  $P$  into  $1/p$  where  $p$  is the price level. Thus, the three equations will be;

$$\begin{array}{lll} P = M \cdot \frac{V}{T} & p = M \cdot \frac{I}{KR} & p = n \cdot \frac{I}{k} \\ \text{Fisher} & \text{Pigou} & \text{Keynes} \end{array}$$

*Similarities.* In all the three equations, price level is shown as directly varying with the quantity of money. Of course, Fisher makes use of the concept of velocity of circulation of money which Marshall has characterised as not a wrong but a long way. This, however, does not mean that Fisher is taking account of certain factors which Cambridge economists ignore. While the former is stressing the medium-of-exchange function of money, the latter stress its store-of-value function. To Fisher demand for money arises from transactions. To Cambridge economists demand for money means the demand to hold money. Now, in a period of boom, people expect prices to rise sharp and fast. They, therefore, replace their stocks swiftly, as they are exhausted. In fact people endeavour to increase their stocks. Thus people part with money swiftly, they do not hold it long. The interval of rest is short. Fisher would describe the situation by saying that the velocity of circulation is high. Cambridge economists would say that demand for money is low. Fisher's  $V$  is high. Pigou's  $k$  is low and so is Keynes's  $k$ . But both descriptions lead to the same conclusion. *Ceteris Paribus*, when  $V$  is high, price level is high. Also, when Pigou's or Keynes's  $I$  is low, price level is high.

*Superiority of Keynes' equation.* Keynes rightly claims superiority for his equation. From his equation it is easier to find where monetary authorities can operate. The purpose is to regulate  $p$ .  $k$  lies outside the sphere of government control. But  $n$  and  $r$  can be controlled by the authorities. Even  $I$  can be regulated by *bank rate*. Suppose now that the price level is to be kept constant. This can be done by effecting changes in  $n$ ,  $r$  and  $I$ , which offset changes in  $k$ .

*Dissimilarities of the equations.* The similarity in Fisher's and Cambridge equations, in that they establish a positive correlation between the quantity of money and price level, is more apparent than real. There is not one price level but a structure of interrelated price levels. To measure changes in price level, we have to construct index numbers. Weightages used in this process depend upon which price level is under consideration.

Let us first take Fisher's equation. He uses the concept of velocity of circulation of money. This concept has a meaning only in terms of transactions. Hence weightages of different items must be decided upon the basis of transactions to which they give rise. In other words, the weightage of a commodity will depend upon its *average*, its quantity exchanged and the number of times each unit, on average, changes hands in a given time.  $P$  in Fisher's equation is,

therefore, the reciprocal of what may be called cash transactions standard

Money kept by the people with themselves and in the banks consists of savings and the sums for personal and business expenditures. The former may be called savings deposits and the latter cash deposits. Cambridge equations refer to cash deposits. These deposits are for use for a large number of personal and business purposes. Hence in price levels of Cambridge equations weightages of items are determined by how cash balances are spent. Evidently, then, here the price level is the reciprocal of cash balances standard.

Thus, the price levels of the Fisher's and Cambridge equations are different.

### CRITICISM OF THE QUANTITY THEORY

Three points of criticism may be raised. First, there is a multiplicity of price levels, each one being important in its own place. Every equation of exchange relates to only one of these. Quantity equations, therefore, are useful instruments of enlightenment, they are not set formulas for tackling all possible situations. Secondly, quantity equations give only the immediate determinants of value of money. Its ultimate determinants must be traced if policies are to be properly conceived and applied. Lastly, the quantity equations give rise to what is called quantity theory approach which stands now discredited. We will now give these points a detailed treatment.

#### I THE RELEVANT PRICE LEVEL

*Multiplicity of price levels* We have seen that various quantity equations refer to different price levels. Price level of Fisher's equation is all inclusive, bringing within its orbit all things—goods, services, securities, shares, etc.—which are the subject of exchange. Price level of Cambridge refers to items for which cash balances are held.

There is in fact a multiplicity of price levels. Index numbers may refer to wholesale prices or retail prices, prices of consumer goods or investment goods, monopoly prices or competitive prices, prices of domestic goods or internationally traded goods. Also, wages have to be included in prices if labour is considered as one of the commodities.

*Relevance of different price levels for different policies* What is exactly the price level we refer to when we speak of the purchasing power of money? J. M. Keynes mentions two standards—the purchasing power standard and the labour standard.<sup>12</sup> Purchasing power standard refers to the prices of consumer goods only while the labour standard to wage rates. If the price level of consumer goods

12. *A Treatise On Money*, Vol. I, p. 133.

rises, value of money in the sense of purchasing power standard shall have fallen and *vice versa*. Similarly, if the average wage rate rises, value of money in the sense of labour standard shall have fallen and *vice versa*.

Keynes considers consumption standard as the purchasing power standard *par excellence*.<sup>13</sup> He, however, does not give any reasons for this. Nor does he give any reason for his preference for labour standard. If the purpose of monetary policy were to always operate upon the prices of consumer goods or upon the rate of wages (to raise, stabilise, or lower them), his choices could be commended. The fact of the matter, however, is that monetary authorities cannot concentrate on any one given price level always. Shifts in stress are unavoidable. Not only that. It may be found necessary to bring down one price level and simultaneously raise another. For instance, if there is an unhealthy speculative rise of prices in the share market and a simultaneous fall in prices of farm products, monetary policy will have to be so engineered as to curb the rise in the former and induce a rise in the latter.

## 2. ULTIMATE DETERMINANTS OF PRICE LEVEL

Quantity equations give us what may be called the immediate or direct determinants of price level. For instance, Pigou's equation tells us that price level depends on  $R$ ,  $k$ ,  $c$ ,  $h$ , and  $M$ . Fisher's equation reveals that  $P$  depends on  $M$ ,  $V$ ,  $M_1$ ,  $V_1$  and  $T$ . If we trace the factors on which these variables depend, we shall have found the ultimate determinants of the price level. Thus, quantity equations render a service in supplying us with headings under which ultimate determinants of the price level may be classified.

*Variables in Pigou's equation.* Pigou has attempted to enumerate the factors on which variables of his equation depend.<sup>14</sup> Take first of all  $R$ , the real income. It is synonymous with total output which depends upon the efficiency of the people. Individually their efficiencies might be increased by improving their health, strength education and cheerfulness. Collective efficiency can be increased by inventions and discoveries.

$L$  is determined by three considerations. One is the convenience of holding purchasing power in cash for use. The other is the satisfaction which can be obtained by spending it on durable goods. The third is lending or investment. The real rivalry is between the first and the third. i.e., between money-use and production-use of resources. The fruitfulness of production-use is estimated by the future anticipations about prices. People prefer to hold less resources in the form of money when prices are expected to rise and *vice versa*. Also, inventions make investments more remunerative. The attractiveness of money-

<sup>13</sup> *Ibid.*, p. 54.

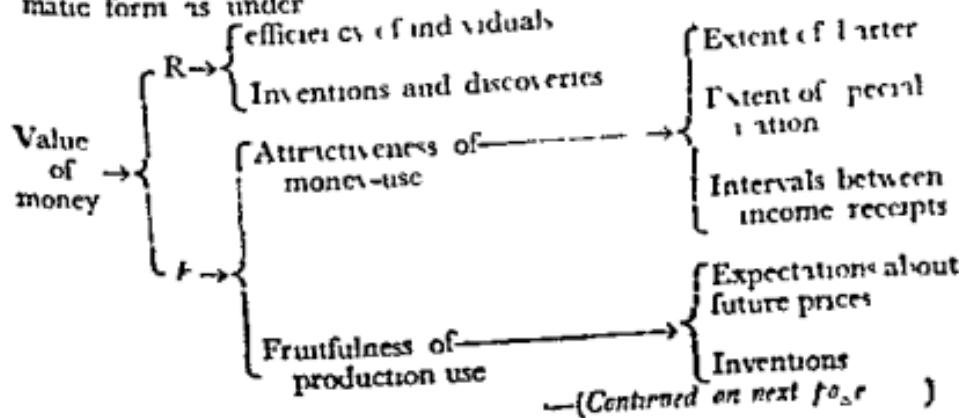
<sup>14</sup> *The Value Of Money, Readings In Monetary Theory*, pp. 162-183.

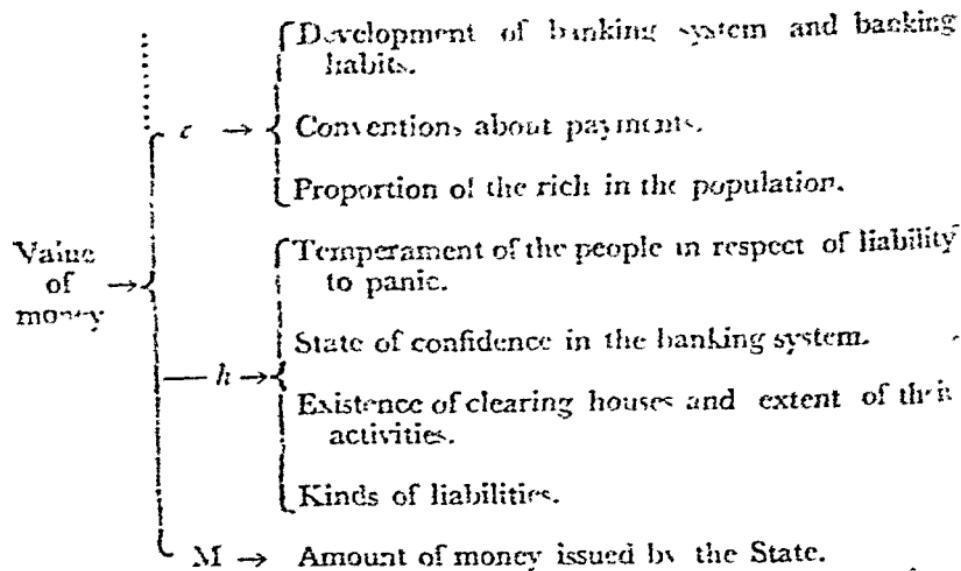
use depends on a number of factors. One is the proportion in which transactions are effected with or without the use of money. In underdeveloped countries many exchanges are effected by barter. In advanced countries factors like cross trade between firms and the existence of clearing houses tend to reduce the need for money but specialisation in all forms tends to increase the requirements of exchange media. The other factor is the interval of time at which people receive incomes. The longer this period, the larger is the amount of money required to be held. It is on the basis of these two sets of considerations—one determining fruitfulness of production use and the other determining attractiveness of money use—that people decide how much resources they will keep in the form of money. The greater the promise of production use or the less the importance of money use, the lower is  $R$  and vice versa.

$c$  is the proportion of State money to bank money. It depends on banking habits, the stage of development of the banking system, conventions about payments to shopkeepers and others, and the proportion of the rich people in the community. Banking habits of the people and the stage of development of banking are interdependent. When people are not inclined to keep accounts banking cannot expand. And people cannot keep accounts, unless there are banks. Hence advance in these two factors goes together and as it proceeds, it reduces  $c$ . Similarly, when shopkeepers allow their customers to make payments after intervals such payments are more convenient to make by cheques. A larger proportions of the rich means more bank accounts and more payments by cheques. Both these circumstances, therefore, reduce  $c$ .

The next variable is  $h$ . In the first place it depends on the temperament of the people in respect of liability to panic, etc. Secondly, it depends upon the state of confidence in the banking system. Thirdly, existence of clearing houses and extension of their activities tend to reduce  $h$ . Lastly, if deposits with banks are those of foreigners or of those who are engaged in foreign trade, large withdrawals are likely every now and then.  $h$  will in that case be high.

Pigou does not discuss the factor  $h$ , but obviously it depends on policies of the monetary authority. All this can be put in a schematic form as under:





*Variables in Fisher's equation.* Fisher was content to give a quantity equation and did not care to trace the determinants of variables on which price level depends. Let us make an attempt to enumerate their determinants.

First take the quantity of money. One determinant of quantity of money is State money issued by monetary authority. Now, a unit of State money with an individual is one unit of money and serves as such. But if the same unit of money is deposited with a bank, credit of a larger amount can be created against it. Hence the two other determinants of quantity of money are, (1) the proportion of State money which people deposit with the banks, and (2) the cash ratio. These two are determined by the banking habits of the people and the general state of trust and confidence.

In a society where there are facilities for investing and borrowing, i.e., when the credit and financial system is well developed, people hold less idle money, both because they can lend or invest easily and because they can borrow whenever they require it themselves. This means that in such a society normal level of velocity of circulation of money is high. This level is also high if income-receipts are frequent and regular. The shorter the interval between successive income-receipts and greater the stability of income-earnings, the less will be the idle cash held by the people. Velocity of circulation will be high.

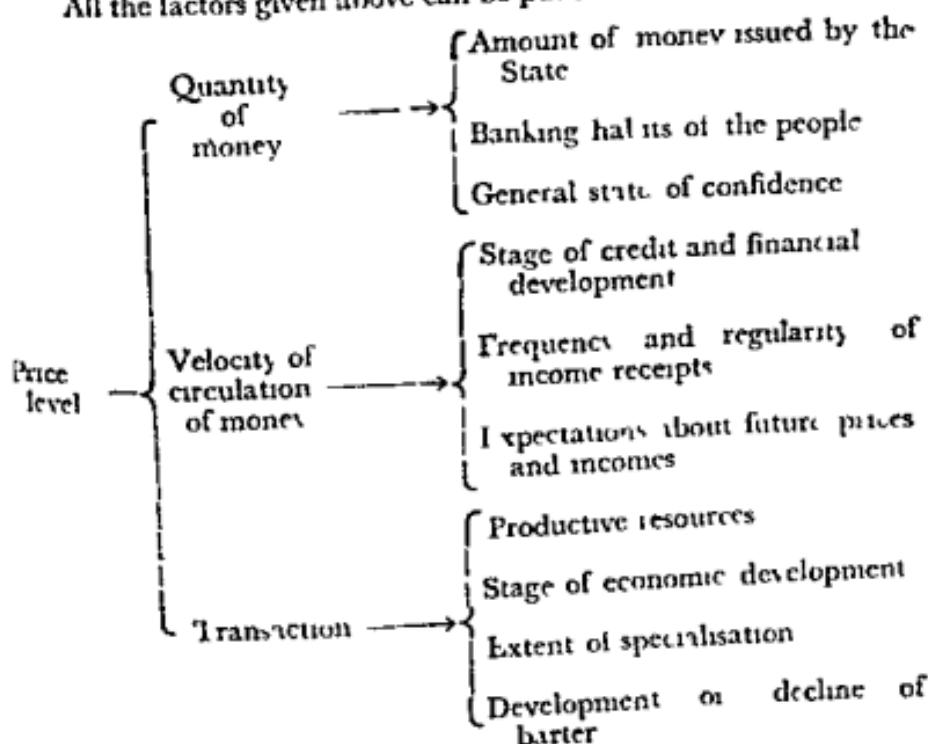
The above factors determine the normal level of velocity in a society. There are, however, variations around this norm brought about by people's anticipations regarding prices and incomes. A rise in prices being synonymous with a fall in the value of money, people prefer to hold goods rather than money in a period of boom, as they expect to receive large incomes in the immediate future.

they are more inclined to spend away their present earnings. For both these reasons, velocity of circulation of money is high in a period of boom. Conversely, it is low in a period of depression, i.e., in a period of falling prices and incomes.

$T$  in Fisher's equation means the number of exchanges effected by money. The number and sizes of these exchanges depend on the level of output which in its turn depends upon the extent of economic resources and the stage of economic development. The larger the volume of output, the higher, other things being equal, will be  $T$ .

The whole output is, however, not exchanged. The proportion of it which is exchanged, depends on the extent of specialisation. Also, a part of what is exchanged, is exchanged by barter. If barter declines,  $T$  tends to be higher.

All the factors given above can be put schematically as under—



### 3 LIMITED APPLICABILITY OF QUANTITY THEORY APPROACH

*Failures of quantity approach.* The crude version of the theory related price level to the quantity of money only. The refined versions have shown that other variables are also involved. Yet, the practical conclusion remains the same, viz., that the monetary authority can influence the price level and economic activity by changes in the quantity of money made available to the community. There have, of course, been many occasions when reductions in money supply have brought about a fall in the price level and increases in it have brought about a

rise in it. Yet manipulation of quantity of money does not constitute a dependable method, because it does not always prove effective. When depression is deep and pessimism and gloom pervade the business world, the government may adopt measures to make more money available to the public but the latter may not take it. Even if money is handed over to the people by purchase of securities, it mostly slips into hoards.

*Alternative approach.* Writings of Wicksell, Hawtrey and Keynes have made it clear that in a period of falling prices, what is required to be increased is not money but incomes and expenditures. Monetary policy will, therefore, be effective if it operates on incomes and expenditures of the people rather than on the quantity of money with them. This new approach has been called income-expenditure approach. We shall discuss this approach in Chapter XXIX. Here we need only point out that this approach lays stress on steps to increase and reduce money incomes to regulate economic activity. The main factors with which this approach deals are output, consumption, saving and investment.

### EFFECTS OF CHANGES IN THE VALUE OF MONEY

*Effects on distribution of incomes and wealth.* If we remember that all incomes are prices of services of individuals as well as their properties, it is not difficult to realise that if changes in the value of money affected all prices equally, these changes would be of little significance. For, in that case, every person's income would change in the same proportion as the prices of goods on which he spends and he would be neither better nor worse off. As it is, however, changes in the value of money influence different prices, especially different income-earnings unequally, and, therefore, has distributional implications.

There are first of all obligations and incomes fixed by contract. Examples are debts, interest charges on debts, rents of buildings, salaries and annuities. When value of money falls, i.e., when price level rises, the same amount of money debt represents less value in terms of goods and services. Hence the debtors benefit and the creditors suffer, when such a change occurs. Similarly, the rentiers, the salaried people, the pensioners, and recipients of annuities are sufferers when prices rise. Contrariwise, fixed-incomeists find their real incomes having gone up when price level falls.

Then there are incomes which change but not equally rapidly with the price level. Wages are the most outstanding example of such incomes. When prices rise, trade unions exert pressure on employers to raise wages. But some time elapses before their efforts bear fruit. Meanwhile the workers continue to suffer. And if prices continue to rise, wages continue to lag behind. This is why in periods of boom workers find it hard to make both ends meet. Conversely employed workers gain from falling prices because wages do not fall very rapidly.

Most volatile of all incomes are profits. They increase when prices rise and decrease when prices fall. Most of the costs—interest, rent, wages—are rigid, they lag behind when prices change. Hence in a period of rising prices profits rise more rapidly than prices. Similarly, when prices fall profits fall more intensely.

*Effect on production and employment.* It is the entrepreneurs, who are to decide whether more is to be produced or less. If they decide to produce more more equipment and workers are employed. On the other hand, if they decide to cut down their outputs, equipment is reduced and so is the number of workers.

Profits guide the entrepreneurs in deciding whether they increase or reduce their outputs. We have already noted that profits are very volatile and change with changes in prices but more rapidly. Thus, in a period of rising prices profits rise fast providing an incentive to the producers to expand their outputs. Production and employment, both, increase. In a period of falling prices on the other hand profits fall swiftly and intensely. Production and employment fall to a lower and lower level.

A period which is marked by fluctuations in prices is a period of high degree of uncertainty. It becomes difficult to predict the future course of prices and demand. Only those, who are prepared to face heavy risks in the hope of earning high profits, continue to remain in business. The less venturesome entrepreneurs quit the field. Even those who remain behind may reduce risks by curtailing output. Total output therefore stands at a low level in such periods. Fluctuations in the internal purchasing power of money also produce fluctuations in foreign exchange rates which enhance risks of foreign trade. Trade and output decrease as a result of it.

It may be noted that to the labouring class as a whole neither the rising prices nor the falling prices are welcome. In a period of rising prices employment stands high but the workers find the commodity value of their money incomes gradually shrinking. On the other hand, when prices are falling increasingly larger numbers find themselves thrown out of jobs day by day. Needless to add that a period of depression is more painful than a period of boom.

### INFLATION<sup>15</sup>

*Meaning of inflation.* We will conclude this chapter by a discussion of inflation.<sup>16</sup> There have been periods in which monetary authorities, generally to finance deficits in the government budgets, have issued more currency. As the currency thus issued was not in response to increase in production and trade, it produced rise in prices. The rise in prices increased requirements of money of the public.

15. The discussion which follows is based mainly on Paul Einzig, *Inflation*.

16. Whatever is said about inflation is applied equally to the anti-them of it namely deflation.

as well as the government. Still more currency had to be issued. This started a vicious spiral in which note issue, prices, costs, and monetary requirements rose and chased one another. Such periods have come to be known as periods of inflation.

Economists have sometimes defined inflation in terms of the factor which started the vicious spiral in periods like the above. In substance these definitions describe inflation as an expansion of currency and credit in excess of normal requirements. For instance, according to the Federal Reserve Board of U.S.A., inflation is "the process of making addition to credits not based upon a commensurate increase in the production of goods".

There have, however, been occasions when the rising trends were initiated not by an increase in the amount of currency but by a rise in prices. A rise in prices may start, for instance, as a result of rise in the prices of imports. Business firms then find their financial resources inadequate to meet their monetary requirements. They approach the banks for more credits. If the government does not issue more currency, there may be financial stringency. If it does, inflationary spiral may get set into motion.

It is thus proper to define inflation as a spiral of a rise in currency issue, prices and monetary requirements, rather than in terms of any single cause which initiates the process. Rise in prices may succeed or precede the expansion in currency. As and when these changes begin to react on each other so that a rising spiral starts, inflation is in existence. Hence inflation is "a state of disequilibrium in which an expansion of purchasing power tends to cause, or is the effect of, an increase of the price level."<sup>17</sup> Thus it is neither the increase in currency nor the rise in prices which by itself constitutes inflation. Inflation is a state of disequilibrium in which prices and currency are chasing each other in their upward rise. Once the two have been adjusted to each other, inflation ceases to exist, even though the price level and the quantity of currency stand higher than where the process started.

*Causes of inflation.* There are many factors which might start the inflationary spiral or might add to its momentum. Such factors are as follows:—

1. The quantity of money—State money or bank money—may be increased. Increase in the quantity of money increases demand. This raises prices and the inflationary spiral might start. Similarly, the initiative might come from an increase in the purchasing power. When incomes of the people rise or when people decide to spend more and save less, rise in prices is very likely. However, increase in purchasing power to have this effect, must be financed by credit expansion.

<sup>17</sup> Paul Einzig, *Inflation*, p. 22.

Inflation, by raising prices, reduces exports and encourages imports. Gold stocks and foreign exchange reserves are adversely affected. As reserves of gold and foreign currencies are required every now and then to meet foreign obligation, their fall below a level is dangerous.

Inflation means continuous reduction in the value of money. When lenders find the value of their loans falling progressively, there is a tendency among them to invest abroad. Foreigners also begin to withdraw their funds from the country. There is thus a flight of capital which is too dangerous a phenomenon to be overlooked.

History bears testimony to the fact that periods of rising and falling prices have succeeded each other. Some economists are inclined to believe that the intensity of a depression is proportional to the intensity of the boom which precedes it. Hence if prices rise very high, they will in reaction fall very low, causing widespread and intense suffering and misery.

*Remedies of inflation.* There are many methods by which inflationary spiral may be curbed. These methods are not exclusive to one another; they are rather complementary.

There are first of all the monetary methods. These are bank rate policy, open market operations, fixing minimum cash ratio for banks and qualitative methods of credit control. We propose to study these methods in the next chapter. Here it may suffice to say that these methods may not by themselves achieve the purpose but are good supplements to other methods.

Secondly, there are physical controls. These may take the form of price controls so that prices of "strategic goods" are frozen at some level. Additional purchasing power then becomes ineffective. Experience shows that price controls are effective only if scarce goods are properly rationed among the people. Rationing of essential raw materials may also accompany price controls. Physical controls may also take the form of compelling firms to produce more of consumer goods in preference to producer goods.

Last category consists of fiscal measures. These may take various forms. Taxes may be increased in such a manner that prices do not rise as a result of them and purchasing power with the people is reduced. Similarly, the government may reduce its expenditure so as to create less incomes. Surplus budgets, obviously, mop up purchasing power. And, finally, tax structure may be so changed as encourages people to save in preference to spending.

least five per cent of its demand liabilities and two per cent of its time liabilities with the Reserve Bank of India.<sup>2</sup> Secondly, the banks are required to send their weekly as well as six-monthly statements of account to the Central Bank. In India, the Reserve Bank has been given very wide powers over the member banks. It can ask for further details about accounts. It can check the accounts of any bank as and when it pleases. It can prohibit any particular transaction, and it can direct their lending policy.

The Central Bank is expected to provide certain facilities to the member banks. It is their adviser as well as lender of the last resort. The banks are given loans against government securities. They can also get their bills rediscounted from the Central Bank.

In India, up to January, 1952, the sole method by which banks could get financial accommodation from the Reserve Bank was loans against government securities. Since then, however, the Reserve Bank has undertaken to rediscount bills of exchange as well as to make advances against promissory notes (provided the period of maturity does not exceed 90 days). The last facility—advances against promissory notes—has been given because bill market is not well developed in this country and banks normally finance business by loans, cash credits and overdrafts. All these can easily be converted into usance promissory notes.<sup>3</sup>

In Great Britain, the Bank of England does not directly deal with the banks. It gives rediscounting facilities to discount houses. These institutions specialise in discounting bills and the like of them do not exist in India. Discount houses are financed by the banks. Whenever banks need more cash, they call back loans from discount houses. The latter then get bills rediscounted from the Bank of England. Thus, funds flow from the latter to the member banks through the discount houses.

The rate at which the Central Bank discounts first class bills is called the *bank rate*. In England the *bank rate* is higher than the market rate of discount. Discount houses, therefore, approach the Bank of England only when they are hard pressed by the banks because getting bills rediscounted involves a loss. Hence it is only in times of monetary stringency that the discount houses approach the Bank of England. Such a situation is described by saying that *the market is in the Bank*.

2. The Reserve Bank has now been empowered to vary these ratios from 5 % to 20 %, in the case of demand liabilities and from 2 % to 8 % in the case of time liabilities. It may also be noted that no interest is admissible on these amounts.

3. The statement of accounts of the banking department of the Reserve Bank on 5th October 1956, shows that no bills of exchange, internal or external, had been rediscounted. But Rs 38 crores had been advanced against usance bills (and Rs 51.8 crores against government securities). The total amount of advances made by scheduled banks against usance bills since 1st January 1956, was over Rs. 286 crores.

The situation in our country is different from the same in England. Here the market rate of discount is higher than the *bank rate*. On bills rediscounted, the banks in India make a profit. This is an important difference. We shall see that in India increases as well as reductions in the *bank rate* influence the rates of interest of member banks. In England, only a reduction in the bank rate is effective. If the bank rate is raised there it remains ineffective until the step is supplemented by other policies.

**3 Central Banking functions** These functions comprise note issue, control of foreign exchange and control of credit.

(a) *The right of note issue* In almost every country, where there is a Central Bank it has been given the sole right of note-issue. This brings uniformity in the currency. It makes it easier for the government to supervise, control, and direct note issue. It also makes it feasible to declare notes in circulation as legal tenders.

The right of note issue is regulated by law. There are two alternative systems of regulation namely, the method of fiduciary issue and the proportional reserve system. The former is the system adopted in England. A certain fixed amount of note issue is permitted to be backed by assets other than gold. This is known as fiduciary issue. The balance of notes must be backed one hundred per cent by gold. The maximum supply of notes is thus dependent on the gold reserves of the Bank of England. It has been alleged that though this system makes for maximum safety, it makes the supply of currency inelastic. But the experience in England shows that whenever a need for substantial increases in money is felt, the fiduciary issue is raised. Originally the fiduciary issue in that country constituted only a small proportion of the total note issue. In April 1947, the total note issue in England stood at 140 crores of which the gold backed currency was less than 20 lakhs.<sup>4</sup>

Proportional reserve system is more common. In this system, certain percentage is fixed below which gold in the assets backing the note issue shall not fall. This percentage is usually between 20 and 40.

In India gold and gold coins are bracketed with sterling sterling securities and other foreign securities. The Reserve Bank of India Act provides that these must constitute at least 40 per cent of the total note issue and that gold and gold coins must be worth at least Rs 40 crores (valued at Rs 21.38 per tola).<sup>5</sup> The Reserve Bank publishes separate accounts for the issue department and the banking department. It is the assets of the former which show how the note issue is backed. We give below the accounts of the Issue Department, as they stood on 5th October 1956.

4. In 1939 the legal limit of fiduciary issue was £400m. By 1947 it had been raised to £1450m.

5. The amendment of April 1956 seeks to provide that gold must be worth at least Rs 115 crores & foreign securities worth 400 crores.

TABLE 27-a.

Liabilities		Assets	
	Rs.		Rs. Crores-
(1) Notes held in Banking department	19,63,58,000	A. Gold coin— (a) held in India (b) held outside India	40,01,71,000 " " "
(2) Notes in Circulation	1430,57,10,000	Foreign securities	586,73,79,000
Total ...	1450,20,68,000	B. Rupee coin and notes	626,75,50,000 119,73,67,000
		Rupee securities	703,71,51,000
		Total ...	1450,20,61,000

It may be noted that gold and foreign securities constitute 43.2 per cent of the total assets.

(b) *Custodian of foreign exchange.* The Central Bank holds a large part of the country's reserve in foreign exchange so that foreigners' confidence in currency is maintained. But to possess foreign exchange to back up the currency is not enough. There should be a spare amount of it, sufficient to meet net foreign obligations as and when they arise.

It is the duty of the Central Bank to look to the stability of the foreign exchange rates. If the exchange rates are free to move as a result of supply and demand, it is expected to vary its policies from time to time in accordance with changes in the situation. If the country is on the gold standard, or has otherwise adopted the policy of fixed exchange, it is for the Central Bank to maintain the rate. In that case, it is expected to purchase and sell foreign currencies at fixed rates. In India there is an obligation on the Reserve Bank to purchase and sell sterlings at the rate of 1s. 6d. to a rupee.<sup>6</sup>

(c) *Control of credit.* We have defined a Central Bank as the executant of monetary policy. And monetary policy is executed by the control of credit. Credit control is, therefore, the basic central banking function. It is advisable to discuss the mechanics and efficiency of the different weapons of credit control in details. Before we do that, a few preliminaries may be discussed.

Government is the ultimate custodian of the political and economic interests of the people. It is, therefore, proper that monetary policy is determined by the government and carried out by the Central Bank. In some countries, the Central Bank is a private shareholders' bank. Even where the Central Bank is owned by the government, it is an autonomous organisation. There are, therefore, occasions

<sup>6</sup> Since exchange control was introduced during the last war, the Reserve can regulate the demand for foreign currency by regulating imports. The right to sell and purchase sterlings at fixed rate still, however, remains.

when there is a variance between the opinions of its authorities and the finance department of the government. Moreover, though the execution of monetary policy is delegated to the Central Bank, there still remain some activities of the government which have financial implications. For instance, a liberal import policy tends to lower the price level and vice versa. Similarly, if the government sells securities, the rate of interest is likely to go up and vice versa. It is thus possible that the activities of the Central Bank and the government pull in opposite directions. For monetary policy to be effective, it is essential that the government and the Central Bank are in agreement. In fact, a Central Bank generally adjusts its policy to that of the government. If a difference arises between the two, it is the government which will have the final say.

We have not yet reached a stage where we could discuss the objectives of monetary policy. We shall discuss this question in Chapter XXXII. Here we can only say that the Central Bank exerts its influence mainly by causing variations in the amount of money—the State money as well as the bank money. It appears that it is easier for it to vary the amount of State money. In fact, the Central bank can make its monetary policy effective by operating upon the bank money.

Given the banking habits of the people, the power of the banks to create credit depends on the total cash with them and the cash ratio maintained by the banks. Cash ratio is something fixed either by the government or by the prevailing conditions. Cash is, therefore, the chief determinant of the power of the banks to create credit. We know that a bank's cash consists of two items—State money, and its deposits with the Central Bank called *bankers' deposits*. The Central Bank can vary the amounts of State money with the public and thereby vary the amount of state money with the banks. But the Central Bank is also the lender of the last resort, so that member banks can always acquire more money from it. Hence if the Central Bank is to control money in circulation, the method is to control the bankers' deposits and then supply the amount of State money appropriate to that level of *bankers' deposits*.

#### WEAPONS OF CREDIT CONTROL

**1. Bank rate policy** We have seen that the Central Bank of a country provides to member banks facilities for rediscounting bills at a fixed rate. It is the lender of the last resort. As a member bank can get financial accommodation from the Central Bank at the *bank rate*, this rate determines the extent to which they would be inclined to get their bills rediscounted. If the Central Bank desires to enlarge *bankers' deposits*, it lowers the *bank rate*. This increases the willingness on the part of the member banks to get their bills rediscounted. As bills are offered for rediscount, the Central Bank makes payments by cheques on itself. There is an increase in the *bankers' deposits* which raises their ability to create deposits. And because the *bank rate*

is now lower, they can afford to lower their own lending or discounting rate and thus make their loans more attractive to their clients. There is, on the one hand, increase in the supply of credit and, on the other hand, there is an increase in the demand for it. Credit deposits soar up.

Conversely, when *bank rate* is raised, banks also raise their own rates of discount. Loans become less attractive to the public. Their borrowings decrease. On the other hand, the extent of rediscounting availed of by the member banks diminishes. As old bills mature and less of new ones are discounted, *bankers' deposits* decrease and their power of lending decreases. The demand from the public, on the one hand, and power of the banks to supply credit, on the other, diminish and the credit deposits decline.

In England *bank rate* is higher than the market rate of discount. When the former is lowered, rediscounting becomes attractive and there is expansion of credit. But an increase in the bank rate is likely to be ineffective. The *bank rate* was already above the market rate and hence rediscounting was not being availed of. Raising of it still further makes no difference to the situation. There are, however, two saving features in the situation. First, the banks generally adjust their own policies to those of the Central Banks. If the latter changes its rate, the members banks take it as a signal and change their own discount rates accordingly. The requisite effect is produced. The second feature is the fact that the weapon of bank rate policy is generally supplemented by another weapon called open market operations which we study next. Here it would suffice to say that when the bank rate is raised, the amount of State money is also withdrawn from circulation by the open market operations. A shortage of funds results and the *market is in the bank*. Similarly, when bank rate is lowered, supply of State money is also increased. In one word, *bank rate* policy and open market operations are employed simultaneously.

2. *Open market operations*. These refer to sale and purchase of government securities by the Central Bank. When the Central Bank aims at stepping up credit creation, it enters the market and purchases securities. The sellers of these securities receive payments in cheques drawn by the Central Bank on itself. They then deposit these cheques with their own banks. Consequently there is, on the one hand, an increase in the deposits of the public with the banks and, on the other, there is an increase in *bankers' deposits*. Increase in *bankers' deposits* increases the lending capacity of the member banks, who follow cheap money policy and credit deposits are pushed up. Thus sale of securities of a given amount by the Central Bank provides the same amount of cash to the banks against which they can create a much larger amount of credit. For instance, suppose the cash ratio of the banks is 10 per cent and the Central Bank sells securities worth one crore rupees, which is deposited with banks. The *bankers' deposits* going up by one crore and their liabilities also by one crore, they are in a position to create a further credit of nine crores.

Conversely a sale of government securities results in payment by the people by cheques on their own banks. People's deposits fall and so do the bankers' deposits. Cash position having weakened the banks are compelled to reduce loans and thus the credit deposit declines.

**3 Variations in Compulsory deposits and cash ratio** The Central Bank may fix a minimum cash ratio for the banks. Whenever, it is desired to reduce credit deposits this minimum may be raised. We have already discussed how power of the banks to create credit is reduced when cash ratio rises. The banks being compelled to keep a higher ratio of cash to deposits, find that they must reduce advances. They, therefore, make their loans less attractive by raising the rate of interest or by other measures.

The same results would be produced by raising the proportion of liabilities which the banks must keep with the Central Bank. Some State money is always essential to meet obligations. If a larger proportion has to be kept with the Central Bank it is tantamount to maintaining a higher cash ratio.

The weapon of fixing a compulsory level of cash ratio can work only in one direction. It is possible for the Central Bank to fix a minimum cash ratio. By raising this minimum, the power of member banks to create deposits can be reduced. But it is not practicable to fix a maximum cash ratio. The Central Bank cannot forbid banks from keeping more cash. For, to insure that there is enough liquidity in the assets of the banks is the duty of the banks themselves. If the Central Bank fixes a maximum cash ratio which the banks themselves consider inadequate then the Central Bank can enforce its orders only by taking up in itself the responsibility for their solvency which no sensible authority would do. Hence while credit can be contracted by compelling the banks to keep a high cash ratio, it cannot be expanded by compelling them to keep a low cash ratio.

**4 Qualitative Control** In recent years there has been a tendency to employ what are called qualitative methods of credit control as distinguished from the above three methods which are quantitative methods. The latter operate upon the cash available to banks or upon cash ratio. The qualitative methods operate upon the conditions attaching to loans. While the quantitative methods work in the direction of reducing the aggregate amount which can be lent, the latter are the methods of selection of whom and against what the loans will be given.

There are many forms which qualitative control may assume. One of these is the familiar one of the Central Bank extending rediscounting facilities only if certain conditions are fulfilled. For instance, in most countries the Central Banks rediscount only those bills of exchange which bear at least two good signatures. Consequently there is a tendency among the member banks to restrict their discounting to those bills which the Central Bank will accept.

Another form is that advances against certain kinds of collateral may be prohibited. The Central Bank may, for instance, prohibit the banks from making advances against certain foreign securities or against stocks of some specific commodities, etc., etc.

One very important form of qualitative control is fixing of "margins". When a bank lends against gold or securities, or a stock of some commodity, it does not lend to the full value of the pledge. For, the loan may have to be recovered by the sale of the pledge, and if at the time of recovery its price stands low, it may suffer a loss. The difference between the value of the pledge at the time of giving loan and the amount lent is known as "margin." Now, if the Central Bank fixes a high margin, the borrowing capacity of those who borrow against such pledges is reduced. The method of fixing "margins" was first adopted in U.S.A. in 1934. It was realised that such a policy could be successful only if the dealers in registered securities are also brought within its orbit. Hence the Board of Directors of the Federal Reserve System (their Central Bank) was given power to regulate loans against registered securities even by brokers, members of security exchanges and other dealers. All of them had to observe the "margin" regulations. The "margin" fixed in the beginning was 55 per cent of the current market price of the security.<sup>7</sup> For one year during the last war the margin required in some cases was 100 per cent. That is, no loans could be given against specified securities.

Qualitative control may be exercised by imposing restrictions on the manner of the repayment of loans. Such restrictions may be in respect of "down payment" i.e., the first instalment, and the number of instalments or the period of repayment. This method also was first employed in U.S.A. to regulate consumers' credit during the last war. The "down payments" prescribed varied from 15 per cent to 33 1/3 per cent of the loan. The period of repayment was first fixed at 15 months and was later on increased to 21 months. The method is considered most suitable for controlling expenditure on durable consumer goods, which is believed to be unstable. By restricting this expenditure, prices can be checked from rising, and by liberalising conditions of repayment, prices can be checked from falling. In U.S.A. regulation of consumers' instalment credit was reintroduced after the war in 1948 to control rising prices and in 1951, restrictions were relaxed as a part of anti-recession policy. It is believed that these measures helped to achieve their respective purposes on both the occasions.

#### EFFICACY OF THE METHODS OF CREDIT CONTROL

Efficacy of bank rate policy. We have already noted that in those countries, where the bank-rate stands above the market rate of discount, the bank-rate policy by itself, is not effective in bringing about contraction.

<sup>7</sup> In fact the formula was a very complicated one. For details, see *Modern Banking*, pp. 253-272.

of credit though it has chances of success in expanding credit. For contraction of credit, *bank rate* policy can be successful only if either the banks adjust their policies in accordance with those of the Central Bank or if the bank rate policy is supplemented by the appropriate open market operations.

The success of the *bank rate* policy depends upon institutional factors. When the Central Bank changes its rate of discount, it is required that not only do the banks change their discount rates, but also the rate of interest outside the banking organisation changes. Now, in a country like India it is estimated that 90 per cent of the total credit requirements of the country are supplied by the indigenous bankers who are outside the sphere of direct influence of the Reserve Bank of India. If they determine their interest rate policies quite independently of the policies of the Reserve Bank, it is obvious that discount rate policies of the Reserve Bank cannot be successful. Similarly, in underdeveloped countries, population is predominantly rural and among them the rate of interest is customary, not competitive. Manipulations in *bank rate* are bound to be ineffective.

*Bank rate* policy pre-supposes elasticity not only in interest rates but also in wages and prices. In recent years certain factors have tended to introduce an element of rigidity in wages. There are vociferous trade unions which would resist cut in wages when prices are falling. On the other hand, when prices are rising, wages lag behind because it takes trade unions some time to compel the employers to concede higher wages. Another factor, which has tended to make the wage structure less responsive to monetary changes, is the tendency towards planned economic development. Thus wages do not change, or change with a lag, in response to monetary policies.

A very important factor contributing to the decline in the importance of *bank rate* policy is the increased use of qualitative methods of credit control. *Bank rate* policy is an indirect method of influencing bank credits and takes time to produce results. Moreover, in recent times, economists have been stressing the disturbing effects of this method. Variations in the rate of interest increase uncertainty in business and thus shake confidence. The disturbing effects are more or less certain to occur, especially if the variation in the *bank rate* are frequent. And it is not certain that changes in the *bank rate* will produce the desired curative effects. And when structures are rigid, curative effects are very uncertain indeed!

*Efficacy of open market operations* Open market operations score over the *bank rate* policy for two reasons. First, they operate directly upon the quantity of money available. The method of *bank rate*, on the other hand, influences the market rate of discount which in its turn influences the quantity of money. Hence while the method of *bank rate* is an indirect method of controlling money, open market operations directly affect the cash and lending capacity of banks.

Secondly, *bank-rate* policies are apt to encounter hurdles in respect of response of banks to them. When the *bank-rate* is raised, the rate of discount of the banks may remain unaffected. When it is lowered, the banks may not avail of the facility because some banks consider borrowing from the Central Bank a sign of weakness. The impact of open market operations is on the cash base of the banks and they cannot ignore changes in the cash base.

But open market operations have their own limitations. A Central Bank does not have unlimited number of government securities to sell. Moreover, as note-issue is regulated by law and as a larger amount of State money becomes appropriate as *bankers' deposits* increase, there is a limit on the extent to which the Central Bank can create these deposits. Lastly, open market operations prove ineffective if people nullify its influence by their actions. For instance, if more money is handed over to the people by purchasing securities but those, who receive this additional money, hoard it, the step taken can produce no results.

*Efficacy of qualitative methods.* Qualitative methods of credit control operate directly on the credit deposits. They can, therefore, produce immediate results. Secondly, these methods do not have any disturbing effects of the type which variations in *bank-rate* might produce. But the most important argument in their favour is that they are a method of selection. By quantitative methods it is possible to influence economic activity as a whole. Now, it may so happen that one sector of the economy needs to be extended more credit, while unhealthy expansion of another sector has to be discouraged. For instance, there might be an unhealthy speculative boom in industrial shares and, at the same time, prices of farm products may be tending to fall. Then it is meet that credits to speculators be restricted and those to purchasers and stockists of farm products be increased. In such cases, it is only the qualitative methods which can help to achieve the desired ends. If, however, loan market is perfect, loans to one industry may be passed on by the borrowers to the producers in other industries. Selective control is then impracticable. But, in the real world, especially in underdeveloped areas, markets for loans are imperfect and are embanked from one another. Selective control has, therefore, a significant role.

*Efficacy of monetary methods.* Monetary methods of control—quantitative as well as qualitative—will bear fruit only if control of credit is comprehensive. This implies that either non-bank credit forms a small part of total credit, or the control extends over the entire field. Much, therefore, depends upon institutional factors. In U.S.A. even for fixing "margin" or for control of consumers' instalment credit, it was found necessary to bring brokers and dealers on security exchanges within the purview of control. In a country like India, where 90 per cent of the credit is supplied by non-bank sources and the agencies are varied and dispersed, monetary methods of control have little chance.

We may, however, conclude by saying that though we cannot be certain that monetary methods of credit control will, by themselves, produce the desired effects, we are certain of the direction in which they exercise their pull. Their own contribution may, therefore, be slight, but they can undoubtedly be helpful to other measures which may be adopted to produce similar results. In other words, even if their own efficacy is slight, they can create the necessary climate for non-monetary measures to prove effective.

## APPENDIX TO CHAPTER XXVII

### MACHANICS OF THE RATE OF INTEREST

*The Problem.* We have throughout our discussion of the bank-rate assumed that a rise in the rate of interest will reduce the demand for loans and a fall will extend the same. This, we believed, would vary the amount of money and the desired results would be produced. We now propose to discuss how variations in the rate of interest actually work to influence the economic activity.

There are two strands of thought. There are economists who believe that changes in the rate of interest influence the level of investment and, hence, the volume of economic activity in the country. There are others who hold the view that the rate of interest operates on import and export of funds as well as goods. We first take up the former view.

A rise in the rate of interest, it is said, discourages and a fall in it encourages investment. When investment increases, incomes and employment also increase and *vice versa*. The important question to be asked is: why is it that investment is likely to increase when the rate of interest falls and it tends to decrease when the rate of interest rises?

*Views of Hawtrey.* According to R. G. Hawtrey, banking organisation influences the business activity through variations in the short-term rate of interest. One of the chief guiding principles for the banks being maintenance of high liquidity, they generally advance only short period loans and their clientele comes mostly from merchants, i.e. those who are engaged in trade and commerce. Variations in the rate of interest influence the stocks of merchants.

There are two reasons why a merchant keeps a stock. First, demand does not flow in at a steady pace so that the amount demanded varies from day to day or from week to week. And there is no certainty when and how many customers will turn up. The merchant keeps himself in readiness to meet a larger demand. Secondly, even the flow of supply may not be steady or certain. Interruptions in supply are ensured against by keeping a stock.

How much stock will a merchant keep at any given time? Against the convenience of holding a stock, he must weigh the cost of doing so. If the merchant borrows money for the purchase of the stock, he has to pay interest on it. If he provides the money himself, he foregoes the interest which he could have earned on it. This interest is an important element in the cost of holding stock. Hence when the banks raise the rate of interest, the cost of holding stock rises and, therefore, the merchants are inclined to reduce their

stocks. Similarly, when the rate of interest falls, they may increase their stocks.

When the merchants have decided to increase their stock, they purchase larger amounts. The producers find their sales going up. They increase their outputs and thus a period of increasing employment and incomes starts. Similarly if the rate of interest is raised, the merchants reduce their stocks. Producers find their sales falling off. They curtail their output. Employment and incomes start falling. Merchants, thus, occupy the pivotal position in respect of tempo of economic activity and it is their actions which the banks directly influence.

*Evaluation of Hawtrey's view.* It cannot be denied that interest is a part of the cost of holding a stock. But it is really questionable if it constitutes such an important consideration as Hawtrey would have us believe. There are other costs of keeping a stock, viz., rent of the warehouse, insurance premium, physical waste and cyclical waste or waste through change of taste or fashion. All these costs, taken together, are in many cases large, so that interest forms a small part of the total cost. Interest in such cases can not be the sole or even the most important determining factor of the size of the stock.

The greatest shortcoming of Hawtrey's analysis is that it does not take account of the most important determinant of volumes of stocks, namely, the dealers' anticipations about prices. When a merchant expects the price of the commodity (he deals in) to rise, he will increase his stock. If he expects the price to fall, he will not replace the stock as sales proceed. Future outlook about prices is by far the most important determinant of stocks especially in advanced stages of booms and depressions. When prices have been progressively falling, merchants' pessimism is deep-rooted and they cannot be induced to keep larger stocks just by a reduction in the rate of interest. Similarly, when prices have been rising fast, merchants are too optimistic to be deterred from keeping large stocks by a rise in the rate of interest.

All this must not be taken to mean that rate of interest is no determinant of volumes of stocks. In periods during which fluctuations in prices are small, the main considerations in determining stocks are insurance against interruptions in supply, on the one hand, and the cost of holding the stock, on the other. And interest is certainly an important element in the cost of holding a stock, especially in the case of non-perishable goods.

*Keynes' approach.* There is no doubt that banks are, as a rule, suppliers of short-term loans only and, therefore, their rate of interest pertains to short term finances. But when they vary their rates of interest, their actions go much farther because there is an intimate connection between the short term and long term rates of interest. A pronounced variation in the former almost invariably leads to a change in the long term rate in the same direction. This is so because the short term finances compete against the long term finances.

When firms require money finance, they may approach some bank for a loan. But there are alternative methods also open to them. Many firms hold government securities and shares of reputed companies. They may sell these, or they may offer new debentures to the investing public. When they borrow from banks, they get short-term loans. If rate of interest on these loans is high, they take recourse to alternative methods. If they sell securities or shares, their prices fall, which means that their rate of yield rises. Similarly, if debentures are issued, they will have to be offered at higher rates. Meanwhile the commercial banks may also have taken some steps which reinforce these tendencies. Finding short-term loans more lucrative than securities and also expecting the Central Bank to sell securities in the open market, which will lower their prices, they start selling securities, which by itself brings down the prices of securities. For all these reasons, when short-term rate of interest rises, long-term rate also rises. Conversely, when there is a fall in the short-term rate of interest, there is a sympathetic rise in the long-term rate.

Every producer is said to have a number of schemes of capital extension which are kept pending for want of funds. In fact, it is not want of funds as such which is responsible for their not being carried out. The real reason is that these schemes are not considered to be remunerative at the rate of interest which has to be paid on the finances required. When the rate of interest falls, many schemes which are not considered worth undertaking at the old rate are now considered to be remunerative. Thus decisions about new capital extensions depend upon the rate of interest. Even the replacements of plants which wear out are determined by it. Hence rate of interest is an important determinant of demand for capital investment.

When rate of interest is reduced, demand for investment rises. Capital extensions are executed. Employment and incomes increase and a period of rising incomes, prices and profits starts. Contrariwise, when the rate of interest is raised, investments are restricted. This produces an adverse effect on employment and incomes. Prices and profits also fall.

*Criticism of Keynesian approach.* Like Hawtrey, Keynes also ignores the most important determinant of capital extensions and replacements. This factor is the producers' anticipations regarding prices. In a period, when people are optimistic about future prices, they carry out extensions and replacements of plants. Rate of interest is comparatively a much less important consideration. Similarly, in a period characterised by a wave of pessimism among producers, lowering of rate of interest will fail to induce them to expand their productive capacities.

Rate of interest is a weapon which, at best, is a fair weather friend. When the problem is of moderate intensity, this weapon works with an effect. But if the malady is desperate, its effect proves much too inappreciable and more powerful methods become necessary.

*International repercussions.* As we have already observed some people believe that variations in the rate of interest operate mainly on the international dealings in capital funds and goods. When the rate of interest in a country rises, foreign investors find loans to residents of this country more remunerative. This increases availability of capital. As many foreigners begin to invest in this country, flight of capital and outflow of gold are stopped or reduced.

A rise in the rate of interest also reduces bank credits and hence the amount of money with the public. Prices are likely to fall, more especially if bank rate policy is accompanied by open market operations. Foreigners find their exports to this country less attractive. Imports of the country under question thus get reduced. Moreover, with a fall in prices, wages and other costs also fall. Exporters can, therefore, sell out goods cheaper. Exports will, thus, increase. For both these reasons outflow of gold is checked completely or partially.

## MONETARY STANDARDS.

## MONEY AND THE STATE

*Composite legal tender system.* All monetary systems of today are composite legal tender systems. One coin or note is declared as standard money. Its supply is supplemented by other forms of money which are expressed as multiples and sub-multiples of it. The multiples are, like the standard money itself, unlimited legal tenders. The sub-multiples are treated as subsidiary money. Such a system is suitable to meet requirements of transactions of different sizes —small, medium, as well as large ones.

*Functions of the State in respect of standard money.* Every modern State assigns to itself two functions in respect of standard money. First, it declares it as money conforming to the description, called money-of-account. It not only undertakes to accept it at *par* in discharge of debts, but also makes it compulsory for all residents to accept it in lieu of business obligations. It is in this manner that the circulation of standard money at its face value is assured. For example, in India every rupee coin (or rupee note) must be accepted by the government or any resident of the country in discharge of business obligation of one rupee.

The other function of the State in respect of standard money is to regulate its purchasing power. It is this function of the State which gives rise to a monetary standard for the country. For, a monetary standard refers to the principle method by which the purchasing power of standard money is regulated. For instance, if the State statutorily binds itself to keep the value of a unit of standard money fixed in terms of a given quantity of some metal, the country is said to be on a monometallic standard. Similarly, if the State decides to have two standard moneys, the value of each corresponding to a given quantity of a different metal, and the ratio between their values is kept fixed, we have a bimetallic standard. And if the purchasing power of standard money is controlled by regulating its quantity, the country is said to be on a paper standard.

In most cases, the forms of money other than standard money are convertible into the latter. Regulation of purchasing power of standard money, therefore, implies also the regulation of the value of all forms of money. Also, as we saw in the last chapter, the issue of bank money is limited by the quantity of State money made available to the public. Hence the regulation of the quantity of standard money means the regulation of the aggregate of exchange media made available to the community at any given time.

The State thus undertakes to maintain the face value as well as to regulate the purchasing power of money. It sometimes so happens—mostly in periods of war—that monetary propriety is subordinated to other objectives. To meet requirements created by these other objectives, the monetary authority may issue huge quantities of State money, thereby sinking very low the purchasing power of standard money. Inflationary spiral starts and goes on gaining momentum. Face value is maintained while the market value falls progressively. If inflation proceeds very far people may repudiate money not accepting it in discharge of obligations even though it is legal tender. Hence, if purchasing power of money falls beyond a stage, face value may also disappear. But such cases are rare.

### MONOMETALLISM

**Definition** Some writers have defined monometallism as the monetary system in which there is only one form of standard money which is full bodied and is made of a given weight of a metal of given fineness. Now the purpose of monometallistic standard is to maintain the value of the standard coin equal to that of a piece of the metal of given weight and fineness. Making the standard coin itself of that metal is not the only method of achieving this end. Other methods are also available and have so often been employed. Hence monometallism is better defined as a monetary system in which the market value of standard money is kept fixed in terms of a given quantity of a metal of given quality.

**Three forms** There are three possible methods by which the value of the standard coin can be made to conform to the value of a given quantity of the metal. One is that the standard money itself is made of that metal. In addition, the people are given full liberty to get the metal minted into coin up to unlimited amounts, as well as to melt coins whenever they please. When these provisions are made, the value of the coin cannot deviate from the value of the given quantity of the metal. For, if the value of the coin rises above that of the metal, people will present more metal for minting so that value of the metal will rise and that of the coin will fall till the two are equal. If, on the other hand, the value of the coin falls below that of the metal, people will melt the coins till the two values coincide again.

The second method is to statutorily bind the monetary authority to convert standard money into the metal and the latter into standard money at a fixed rate. In such a case, the standard money is neither made of the metal nor is it full bodied. Its value can however, not deviate from that of given quantity of the metal. For, in the case of any deviation people will take advantage of the provision of convertibility. The ratio between their values must be the same as the official ratio.

The third method is to fix a ratio at which the monetary authority is obliged to purchase and sell a foreign currency which itself is tied

to the metal in its own country by either the first or the second method. In other words, a foreign currency may be selected which is either made of the metal or is convertible into the metal at a fixed rate. The monetary authority of the country in question is then bound by law to exchange home currency for the foreign currency and *vice versa*. It is self-evident that to thus fix the value of the home currency is, in effect, to fix it in terms of the metal.

*Choice of the metal.* Generally gold or silver has been used for monometallic standards.<sup>1</sup> When gold is thus selected as standard metal for the currency, the monetary system is called the gold standard. On the other hand, when silver is used for the purpose, the country is said to be on the silver standard. Gold standard has been common in the later part of the nineteenth century as well as the beginning of the present century. We study below the questions relating to the gold standard, but all analytical observations shall, *mutatis mutandis*, apply to the silver standard.

### THE GOLD STANDARD

*Meaning and forms.* Gold standard is the monometallic standard in which gold is the standard metal, so that the value of standard money is kept equal to that of a given weight of gold. As we have said above, there are three methods of achieving this. Corresponding to each of these three methods, we have a different kind of gold standard.

When the standard coin is made of gold and its minting is free and melting is allowed, the country is said to be on gold currency standard or full-fledged gold standard. When the second method is followed, that is, when the monetary authority undertakes to buy and sell gold at a fixed rate, gold bullion standard is in operation. Lastly, if the monetary authority of a country is obliged by law to buy and sell, at fixed rates, the currency of a foreign country which is on the gold standard, then the former country is said to be on gold exchange standard.

One essential feature common to all the three types of gold standard is that there is no embargo, whatsoever, on the import and export of gold. As we shall presently see, this condition must be satisfied if it is to be a gold standard *par excellence*. In case, value of the standard coin is kept equal to the value of a given quantity of gold, but some restriction is placed on the export or import of gold, the monetary system is called a limping gold standard. Free export and import of gold is, thus, one of the two legs on which the gold standard stands, the other being the link of the standard coin with gold.

*Comparison of the three forms.* The three forms of gold standard have, then, two features in common. First, in each case the value of the standard coin remains at level with that of a given quantity of gold.

<sup>1</sup> Iron was used as the standard metal in the kingdom of Sparta.

Second, in each case, movements of gold into and out of the country are unrestricted. There are differences also. Gold bullion and gold exchange standard are economical, while gold currency standard is more confidence-creating. The latter is therefore, more suitable for a country where people are unstructured and are sensitive to rumours. Gold exchange standard has an additional merit. In gold bullion standard, reserves are kept in gold which is a non income yielding asset. In gold exchange standard monetary reserves can be kept in the form of foreign securities on which interest can be earned. It is sometimes said that the value of foreign securities might fall in terms of gold and then the country on the gold exchange standard might find itself at a disadvantage. This, however, is not a demerit peculiar to the gold exchange standard. For even when a country is on the gold bullion standard, there is always a risk that value of gold in the international market might fall.

*Two functions.* The gold standard is said to perform two functions. In the first place it is a convenient method of controlling the currency. Currency laws of the country, which is on the gold standard, generally place restrictions on the issue of currency notes. The restrictions usually take the form that notes can be issued only if some quantity of gold is held in the reserve. The amount which can be issued without any such backing, may be fixed and it may be provided that any amount in excess of that must be backed 100 per cent by gold. The amount which can be issued without any backing is called fiduciary issue. Or else, the proportional reserve system may be enjoined according to which the gold in reserve must not be less than a given percentage of the total note issue. In either case, the purpose is to restrict the issue of notes with a view to maintaining its internal value. When only one country is on the gold standard this is the only function which the standard has to perform, and the standard may, therefore, be called the domestic gold standard.<sup>2</sup>

The other function of the gold standard is to keep exchange rate of the currency fixed in terms of currencies of other countries which are on the gold standard.<sup>3</sup> When two countries are on the gold standard, their respective monetary authorities undertake to buy and sell gold (directly or indirectly) in unlimited amounts at fixed rates. The price of gold in the two countries is thus fixed in terms of their standard coins. This, obviously, fixes the value of the two coins in terms of each other. For instance, suppose a unit of standard money in country A is valued at 1/3rd of an ounce of gold and that of country B at 1/4th of an ounce. Three units of the former will then exchange for four units of the latter, because both represent the value of one ounce of gold. It must be evident that gold standard can and will perform this function between those countries only which

<sup>2</sup> Crowther uses the phrase 'domestic gold standard' to denote this function rather than this type of the gold standard of *An Outline Of Money*, (Revised edition) p. 284.

<sup>3</sup> In the following argument we abstract from the costs of transportation.

are on the gold standard. In other words, this function belongs to the international gold standard. When we spoke of unrestricted movement of gold into and out of the country as one leg of the standard, it is the international gold standard which was meant.

### THE DOMESTIC GOLD STANDARD

*Stabilising volume of currency.* It is sometimes claimed that the gold standard stabilises the volume of currency and also, thereby, stabilises the internal value of the currency. It is said that the issue of standard money is limited by the size of the gold stocks in the country; the issue of notes is, because of their convertibility, limited by the quantity of standard money; and the quantity of bank money is, because of the necessity of a minimum cash ratio, limited by the aggregate quantity of State money.

The argument given above, is unsound in many ways. In the first place, it assumes that the stock of gold with the monetary authority in a country remains more or less fixed. There is no justification for this assumption, because there are a large number of factors which may produce variations in the gold holding of a monetary authority. First, in a country on the gold standard, gold is required for monetary as well as industrial purposes. Variations in the demand for industrial purposes will give rise to variations in the supply of gold for monetary purposes. Secondly, gold may be used as a medium for hoarding. Dishoarding will increase the supply and increased hoarding will reduce the supply for monetary requirements. Thirdly, imbalance in the balance of payments with other countries, will tend to change the quantity of gold with monetary authorities. Lastly, though ordinarily supplies of gold available to the world as a whole change rather slowly, yet when new mines are discovered, supplies increase with a jump. When quantities available to the world as a whole increase, the same available to an individual country also usually increase. Thus the belief, that with gold standard the quantity of money in the country is static, is unwarranted. Quantities of gold with the monetary authority are liable to fluctuate, sometimes very widely indeed. These fluctuations in the stock of gold are apt to produce changes in the quantity of money.

*Stability in the price level.* Another objection to the argument is that even if we admit that the gold standard does stabilise the volume of money in the country, it does not mean that stability is achieved in the price level. Stability in the price level can be attained by adjusting the supply of money to changes in the demand for money or, what Crowther calls, changes in "Money work". We have already studied the cash transactions as well as cash balances version of the quantity theory. According to the former, the amount of "money work" increases when transactions increase. According to the latter, it changes with changes in the proportion of resources which people prefer to keep in the form of cash. In either case, the amount of "money work" is liable to variations. If the total quantity of money is stable while "money work" is marked by variations, price level will fluctuate. Only, of course, the price of gold remains stable.

It is, then, evident that the gold standard maintains only the price of gold at a given level. In fact, there is no mechanism implicit in the gold standard which can undertake the function of stability of price level. It is a very backward tribe indeed which can be satisfied with an elimination of fluctuations in the price of gold only. If internal stability is the objective of the policy of a monetary authority, it must be stability of the general price level. Stability in the price of gold has no meaning.

### INTERNATIONAL GOLD STANDARD

*Encouragement to trade and capital movements.* When gold standard is adopted by a number of countries exchange rates between them become fixed. As we have already seen, this fixity of exchange rates arises from the convertibility of coins in their respective countries into gold at fixed rates. Stability of exchange rates eliminates one element of uncertainty which could arise from fluctuations.<sup>4</sup> It, so far as it goes, leads to expansion of international trade. It is also conducive to international movements of capital. Fluctuations in exchange rates are discouraging to foreign investments, stability promotes confidence of foreign investors.

*Automatism of the standard.* The most important merit claimed for the gold standard is its automatism. It is claimed that an imbalance in the balance of payment—a difference between claims and liabilities of a country arising out of its transactions with the rest of the world—gets automatically corrected when countries have adopted this system. This, it is claimed is brought about by movements of gold as between the countries on the gold standard.

Suppose a country has an adverse balance of payments, i.e. it has to make to other countries more payments than it has to receive. The net balance is paid out in gold. Diminution of gold in the country means that there will be less currency. Not only that. The loss of gold leads to reduction of cash with the banks and bank money contracts. And we know that a given amount of cash supports a much larger amount of credit. Thus the total contraction in exchange media is much greater than the quantity of gold which moves out. Similarly, in the gold receiving country total expansion in exchange media is much more than the inflow of gold.

Classical writers stressed the effects of gold movements on prices and costs. They held that gold movements out of the country reduce money in circulation, which, in accordance with the quantity theory of money, leads to a fall in the price level. Its exports are encouraged and imports discouraged. Claims on other countries arising out of transactions increase and payments which fall due to them on account of imports diminish. The imbalance in the balance

<sup>4</sup> In fact fluctuations are not completely eliminated. The exchange rate between two countries on the gold standard does fluctuate between the narrow limits called specie points. We shall take up the question of specie points in Chapter XXXIII. As however specie points are not wide apart, fluctuations are small and the argument holds in substance.

of payments is removed. Similarly, in the gold importing country costs and prices rise which reduce its exports and increase imports. Thus its excess of credits over debits is wiped out.

Modern economists stress the effect of changes in monetary circulation on incomes and expenditures. It is said that purchasing power in the gold-losing country falls. There incomes and expenditures fall. Its people make less purchases from the outside countries. On the other hand, in the gold-receiving country incomes and expenditures rise which increase foreign purchases and reduce exports. Another important factor is the rate of interest. When a country loses gold, cash holdings of banks fall and they raise the rates of interest. Funds are attracted from outside. This also tends to reduce the divergence between credits and debits with other countries.

In any case, the gold standard brings about an automatic adjustment in three steps. The first step is that countries with negative balance lose gold and those with positive balance receive it. The second step is that credit contracts in the former and expands in the latter. The third step is that exports are encouraged and imports discouraged in gold losing countries and imports increase and exports fall in the other countries. The imbalance thus gets removed.

*Hurdles in the working of international gold standard.* The international gold standard will bring about adjustments in international payments if it is permitted to do its job unobstructed. And it did so work until 1914. Since then, however, factors have appeared which have made working of the gold standard difficult.

1. *The golden rule.* If the standard is to prove an effective weapon against disparities in the balance of payments, the governments concerned must observe the rules of the game. We know that modern currencies are overlaid with large credit superstructures. Now, exports of gold will correct the adverse balance of payments if the total amount of money in the country decreases. When gold is flowing, out, credit must also contract. The monetary authority must adopt policies so that bank advances are reduced. Similarly, when gold is flowing in, credit must be expanded. This, then, is the rule of the game: Contract credit when gold is flowing out, and expand credit when gold is flowing in.

Modern governments are generally not prepared to observe the rule. As a result of writings of Keynes, stability of internal trade and prices has come to occupy a place of precedence over stability of foreign trade. And rules of the gold standard come into conflict with the aims of domestic monetary policy. If outflow of gold is permitted unrestricted and is reinforced by credit contraction, incomes, expenditures, prices, production, and employment fall, and conditions of depression ensue with all their attendant misery. Moreover, the outflow of gold may not raise price levels abroad if the latter are ~~not~~ <sup>not</sup> gold. Even otherwise, imports may be restricted by foreign countries by raising customs duties. This is why England, when she

turned to gold standard in 1925, adopted only a limpint, gold standard, that is, not permitting unrestricted exports of gold.

Even a continuing inflow of gold is not welcome. It locks up resources in gold, which is a barren investment. Moreover if credit expansion accompanies imports of gold, prices rise and inflationary spiral is likely to develop. And inflation is no less an evil than depression. It is this fear of inflation which leads gold receiving countries to sterilise gold by raising discount rate.

Hence one hurdle in the way of successful working of the gold standard in modern economies is the unwillingness of modern governments to subordinate interests of internal trade and production to those of foreign trade. And to quote Crowther, "gold standard is a jealous god. It will work—provided it is given exclusive devotion".<sup>5</sup>

**2 Rigidity of cost structures** We have noted above that, according to classical economists, movements of gold bring about adjustments in the balance of payments by operating upon costs and prices. Even modern economists do not rule out changes in costs and prices. But cost structures have become rigid so that downward movements in them are rather difficult to occur. Taxes are inflexible and interest rates sticky. Mounting influence of trade unions has made wage rates also very rigid. Cuts in wages are firmly, and in most cases successfully, resisted. Hence when gold flows out, costs do not fall appropriately. Consequently, necessary outflows of gold are large which exhaust the prudence of monetary authorities before the desired results have been achieved.

**3 Capital movements** Frictions are caused by movements of capital. When gold is flowing out, prices are expected to fall. Capital, therefore, begins to be exported. Such exports of capital are difficult to stop by raising interest rates. Similarly, in gold receiving countries, prices are expected to rise and capital flows in. Thus, while a successful working of the gold standard requires that capital flows towards countries losing gold from countries receiving gold, anticipations about prices produce just the opposite kinds of movements. Probability of smooth working of gold standard has become remote since international movements of capital have become substantial in recent years.

#### FUTURE OF THE GOLD STANDARD

**Internal stability and exchange stability** There are not many advocates of the return of gold standard, because the service which it could possibly render is difficult to perform in the economic working of today. No doubt, stability of prices has been achieved by it over long intervals. But that was when production of gold proceeded smoothly and there were not large variations in its demand for industrial purposes. Otherwise, as we have seen, this standard cannot perform the function of keeping internal price level stable. It only keeps the

and silver. There are four essentials of such a standard. First, there is a free coinage of both the standard coins. Any person holding gold or silver can get it converted into the relevant coin at the mint. Secondly, coins of both the metals are made unlimited legal tender. People have the full option of meeting their business obligations in either of the two. The third requirement is that the two coins are exchangeable at a ratio fixed by the State. Not that the absence of a fixed ratio will rob the standard of its bimetallic character, but that it will make monetary conditions chaotic. If the ratio between the two coins is left to vary along with market prices of the two metals, there will really be two monetary units. There will then be two price levels, each fluctuating in terms of the other. Two monetary systems, independent of each other, are bound to spread currency chaos. A fixed ratio between the two standard coins is therefore, indispensable to the smooth working of bimetallism. The fourth essential follows from the third. The government can effectively enforce a fixed ratio between the two coins if it undertakes the obligation of converting either of these into the other at that ratio. Also, it must undertake to convert currency notes on demand into either of the coins at the option of the public. For these purposes the monetary authority has to keep reserves of both the metals.

*Mint ratio and market ratio.* The chief difficulty with bimetallism is said to arise when the market rate comes to differ from the legal rate. The metal for which the legal rate is lower than the market rate is said to be undervalued. The undervalued metal begins either to be exported or hoarded because it carries a higher value in the market. In other words, the overvalued metal has a tendency to drive the undervalued metal out of circulation. As differences between the market ratio and the legal ratio are apt to arise quite often, it is concluded that, in effect, the standard comes to be based sometimes on one metal and sometimes on the other. It is in rare intervals that it is based on both.

It must, however, be noted that market ratio and legal ratio cannot be different within the same country. For, when the monetary authority is prepared to exchange either coin for the other at the legal ratio up to unlimited amounts, no buyer of either metal would buy it dearer, nor would any seller sell it cheaper. The market rate must conform to the legal rate.\*

The legal ratio fixed in a country may, however, differ from the ratio in the foreign markets. In that case, the undervalued coin begins to be exported or hoarded. Hence, if only one country (or even a few countries) adopts bimetallism, the system cannot work for any considerable period. If, however, bimetallism is adopted on a worldwide basis with a common mint (legal) ratio, divergence between market ratio and mint ratio would not be possible.

\* Of course, a divergence between the two will occur when stock of one of the metals with the monetary authority has been exhausted. But then, bimetallism will have ceased to exist.

*Case for bimetallism.* An international bimetallism has two advantages over mono-metallism. First, in a progressive world as ours, in which population and production are increasing, monetary requirements are also increasing. This increase in requirements can be better met by two metals than one. This is, however, not so important when the world has learnt the art of supplementing metallic currencies by paper currencies.

The second merit is important. Value of money tends to be stable in this system. When, due to improved technique or discovery of new mines, the production of one of the metals becomes cheaper, its quantity increases, and costs and prices rise. Cost of mining the other metal also rises. Its production decreases. Thus, an increase in the output of one is balanced by a decrease in the output of the other.

But the case for bimetallism is only for an international bimetallism. It can succeed only if all countries, or a large majority of them, adopt it, and also all of them agree upon a single mint ratio.

#### PAPER CURRENCY STANDARD

*Paper Money.* When a country is on a metallic standard, it introduces currency notes which are of the value of multiples of standard money. These notes are promises of the currency authority to convert them into standard money at their face value. They are, therefore, called convertible paper currency. These are issued only to facilitate carriage and transport of money and also to facilitate purchases and sales involving large payments. The monetary system, being based upon the metallic money, continues to be a metallic standard.

*Paper currency standard.* If the currency authority suspends the provision of convertibility of currency notes into standard money—either because it has no intentions or because it has no ability to do so—the paper money becomes fiat money or inconvertible paper currency. The first victim of inconvertibility of paper money is the metallic money. As the quantity of notes issued increases, metallic money is driven out of circulation. It is either exported or hoarded. When it has been completely replaced, any further increase in paper money raises prices and lowers exchange rate. Metallic currency may still be available at a premium. But the system shall, for all practical purposes, have become a paper currency standard.

A paper currency standard, in its pure form, exists when the standard or definitive money itself is a paper note. In that case, convertibility of currency notes of higher denominations carries no meaning because notes are convertible into notes. For instance, in England a five sterling note is convertible into sterlings, but sterlings are themselves notes. Similarly, a ten- or a hundred-rupee note in India is convertible only into rupee notes.<sup>7</sup> Most countries of the world are today on paper currency standard.

<sup>7</sup> Even rupee coins are just notes printed on metal.

Currency notes, which have been declared inconvertible, or which are convertible only into "standard notes," continue to circulate for two reasons. First, because they have the authority of government behind them. Second, and the more important reason is, that they are issued in limited quantities so that they are just enough to do the money work. If, however, they are issued in excessive amounts, evils, like rise in the price level and depreciation of the value in the foreign exchange market, prevail. If their issue is increased continuously, people lose confidence in the currency and the dangerous phenomena like the loss of face value of money and flight of capital run their ugly heads.

*Evaluation of the system.* The paper currency standard is essentially a managed system and its success or failure depends upon how it is managed. If the issue of paper money is properly regulated, its value can be kept stable more easily than of a metallic currency. The value of a metal, like gold, depends upon the world's supply of gold which is a factor beyond the control of the monetary authority of any single country. But the value of paper money depending as it does on the quantity of note issue can easily be regulated by such an authority. While a gold standard is better suited for exchange stability, a paper standard is much better suited for implementation of domestic economic policies with respect to incomes and employment. A paper currency standard is also a cheaper standard because it does not oblige the government to lock up its resources in the form of any non-income yielding assets.

The demerit of the paper currency standard lies in the ease with which it can be issued in excess. Whenever the government is faced with financial difficulties issue of paper currency provides the easiest way of getting command over purchasing power. It is course has generally been adopted in periods of war. Thus, it is in the war years that extremes of note-issue and inflation have occurred—in Germany during the First Great War, and in China during the Second World War.

#### IMF AND THE GOLD PARITY STANDARD

*Working of IMF.* The coming into existence of International Monetary Fund has given rise to what may be called gold parity standard. The Fund was established in 1945, with a view to avoiding competitive depreciation of currencies without interfering with internal economic liberties of the member countries. Although the primary purpose of the Fund is to promote exchange stability, through international monetary co-operation, the Articles of Agreement are based on the assumption that considerations of output and employment must receive precedence over exchange stability.

The resources of the Fund consist of contributions of the member countries. Each country's contribution or quota is fixed. It varies from \$ 2750 million for USA, to one half million for Panama. Each member has subscribed its quota partly in its own currency and partly in gold or in USA dollars. Thus, the Fund

continues to enjoy the status of medium for international payments, it deserves a place of importance. But the merit of the gold parity standard lies in the fact that it secures the advantages of the gold standard without its expensiveness and rigidity. Countries on this standard have not to keep large stocks of gold. Nor have they to let economic conditions at home drift at the instance of gold movements. Gold standard sacrifices objectives of the domestic economic policy on the altar of exchange stability. Gold parity standard leaves a very wide scope for the pursuit of economic objectives on the domestic front. Gold parity standard also differs from the gold standard in that it seeks to secure exchange stability, without rigidity. Changes in exchange rates are permitted, only frequent changes and competitive depreciation are to be checked. When there is a fundamental disequilibrium, it is better to realise that the rate must be changed.

Avoiding the rigidities of the gold standard, the parity standard can still achieve expansion and contraction of credit when and where required. Suppose, for instance, India is a deficit country and so she purchases USA dollars. More rupees will be credited to the account of the I M F in the Reserve Bank of India and the latter will get a command over dollars. When these dollars are sold to the banks, deposits of the banks with the Reserve Bank decrease. Banker's deposits having contracted, there will be contraction of credit. The dollars received in USA as payments will increase banker's deposits and expansion of credit will occur. The operation, therefore, has, to the extent that it goes, a correcting influence on the balance of payments.

Two doubts have been expressed regarding the working of the Fund. First, as there is a limit beyond which deficit countries cannot borrow, and there is nothing to bind the surplus countries to any action, the burden of correcting disequilibrium is placed mainly on deficit countries. This is unfair. Secondly, it is feared that accommodation allowable in respect of foreign currencies is very much limited. For instance, India's total quota in the Fund is of the order of Rs 200 crores. In any single year she can borrow only Rs 50 crores. For a country whose foreign trade runs to the tune of Rs 1200 crores, such an accommodation in times of difficulty is too meagre. Hence the Fund might prove only a fair weather friend, refusing to help when the storms are really furious.

CHAPTER XXIX  
INCOME AND EMPLOYMENT  
THE PROBLEM

*Kinds of unemployment.* One of the fundamental aims of economic study and policy is achievement of full employment. There are many factors which give rise to unemployment. Economic life is dynamic; demand for the products of some industries is rising and of others is falling. Shifts of labour from industry to industry takes time. During the interval workers remain without jobs. This is *frictional unemployment*. Secondly, an industry may be experiencing a fall in demand and the workers may not shift to other industries, because the latter offer lower wages or require a special training. It may even be that they do not change over in the hope that the demand in the industry, in which they have been working, would soon revive. Such is the *structural unemployment*. Thirdly, there may be *voluntary unemployment*, which refers to those men who are unwilling to work at the prevailing rate of wages, or at any rate of wages. We are here concerned with none of these types. We shall treat of only the *involuntary unemployment* which means unemployment of workers who cannot find jobs even though they are prepared to accept the prevailing rate of wages.

*Inadequacy of partial equilibrium analysis.* Partial equilibrium analysis cannot provide an answer to this problem. It assumes that changes in the rate of wages paid to the workers in the industry in question do not reduce the demand for its product. With reduction in wages, costs are reduced. This enables the entrepreneurs to lower the price and thus sell a larger amount. More is produced and, hence, more workers are employed. Thus a cut in wages in an industry results in increased employment in that industry. But when there is a general cut in the wage rate, the assumption, that the demand for goods in general remains unchanged, is not permissible. A general cut in wages is bound to influence the demand for goods in general, and, hence, the demand for labour.

Moreover, partial equilibrium analysis treats money as a veil. This analysis is done in "real" terms. General equilibrium analysis, on the other hand, must take account of the fact that money income can not only be spent on goods, it can also be hoarded. If it is spent, it creates a demand for goods of one kind or another. If it is hoarded, it serves only as a store of value for the period during which it remains hoarded.

*An assumption.* Aggregate employment is a function of aggregate output. But the relation is not one of exact proportionality. In other words, employment increases when output increases, but there is

no reason to believe that if output is doubled, aggregate employment must also be doubled. It will, however, facilitate discussion if we assume a relation of direct proportionality between the two. It will prove a very helpful simplification.

### CLASSICAL THEORY OF EMPLOYMENT

*Say's law* Classical economists, among whom the names of J. B. Say, David Ricardo, and J. S. Mill need specifically be mentioned, held the view that general glut or overproduction is impossible. This view was based upon what is known as Say's "Law of markets". It is difficult to find a clear statement of the law in Say's own writings. One sentence is, however, significant. When translated from the original French, it reads "It is production which creates markets for goods". Every producer sells his product for the goods which he requires. Hence every supply creates demand. If over-supply is not possible, how can general unemployment be possible?

*Mill's Exposition of the law* A fine elucidation of this law is found in Mill's "Principles of Political Economy"<sup>1</sup>. He says that there are two possible reasons why demand should fall short of supply. First, people do not possess enough purchasing power. Second, they do not have the desire to utilise their purchasing power. As regards the former he says —

"All sellers are inevitably and ex *et termini* buyers. Could we suddenly double the productive powers of the country, we should double the supply of commodities in every market, but we should by the same stroke double the purchasing power. Everybody would bring a double demand as well as supply. It is probable, indeed, that there would now be a superfluity of certain things. Although the community would willingly double its aggregate consumption, it may already have as much as it desires of some commodities.

If so, the supply will adapt itself accordingly... At any rate, it is a sheer absurdity that all things should fall in value, and that all producers, in consequence, be insufficiently remunerated."<sup>2</sup>

Regarding the second, he takes the case of a foreigner entering the economy and writes —

"The new-comer brought with him into the country a demand for commodities, equal to all that he could produce by his industry, and it was his business to see that the supply he brought should be suitable to that demand... We saw before that whoever brings additional commodities to the market, brings an additional power of purchase, we now see

1 Ashley edition, pp. 558-62

2 *Ibid.*, p. 558

that he brings also an additional desire to consume; since if he had not that desire, he would not have troubled himself to produce."<sup>3</sup>

Production can thus not be excessive though it can be ill-assorted. It may be objected that some persons produce and accumulate. But such persons invest their savings productively. So they make over the surplus purchasing power to the labouring class. The latter will either spend the purchasing power or, finding their wages having risen, work less so that production diminishes.

Mill, however, does allow an excess of all commodities over money demand in periods of commercial crises. In that case everybody will be a seller and there will be very few buyers. But such crises result from excess of speculation and not from excess of supply. And the remedy is not a reduction of supply but the restoration of confidence.

Hence general glut cannot occur. Partial gluts are possible but forces at work remove them in due course. Full employment is the normal situation towards which actual situation always gravitates.

*Pigou's version.* Say's law and Mill's exposition of it are couched in the language which was apt for the society in which a typical worker was self-employed, so that the workers sold their products, not labour. Products are, in the ultimate analysis, exchanged for products. Supply creates its own demand. And employment for a worker meant ability to find a market for his product.

In the modern society, most workers are wage earners. To be employed means to work for others for a wage. Pigou reconstructed the classical theory to make it applicable to the labour market.<sup>4</sup> According to him, given the demand conditions for labour, wages will come to stand at such a level that all workers are employed. Whatever unemployment exists, is either due to changes in conditions of demand or to frictions of imperfect market. Full employment is a matter of automatic adjustment. Hence if the government of a country takes steps to improve the conditions of demand for labour, it does not provide any remedy against unemployment. For, even if they did not take any steps, full employment would occur only if the conditions of demand stopped fluctuating. State of demand, therefore, does not matter. What really cause unemployment, are changes in demand. In other words, there cannot be any involuntary unemployment. There can only be frictional unemployment.

Using algebraic language, he says,  $N = \frac{qY}{W}$  where,

$N$  is the number of workers employed.

$Y$  is national income,

<sup>3</sup> *Ibid*, p. 559.

<sup>4</sup> *The Theory Of Unemployment* (1933).

$q$  is proportion of  $Y$  paid as wages  
and,  $W$  is wage rate

$N$  can always be increased by a reduction in  $W$ . In fact,  $W$  will so adjust itself that  $N$  just equals the total number of workers

### KEYNES' VIEWS ON CLASSICAL THEORY

*Three allied assumptions* The Pigovian approach is based upon a number of assumptions. Three of these assumptions are such as, though they appear to be separate, are in fact allied. Keynes goes to the extent of holding that these three assumptions "all amount to the same thing in the sense that they all stand and fall together, any one of them logically involving the other two".<sup>5</sup>

1 *Real wage equals marginal disutility of employment.* One assumption is that wage is equal to marginal disutility of existing employment. In other words, every person works such number of days per year that disutility of marginal day's work equals real wage per day. If real wage rises, workers would work for more days till again marginal disutility of work equals real wage rate.

There are two objections against this assumption. The first is regarding the behaviour of labour. If we accept the above assumption, we then accept that supply of labour would fall if there is a fall in real wages. Now a fall in real wages may result from a fall in the money wage, price level remaining the same. Or, it may result from a rise in the price level, money wage remaining the same. Supply of labour does respond to changes of the former kind. But the assumption, that workers will reduce their supply of labour every time there is a small rise in the cost of living is contrary to experience.

The second objection is more fundamental. To assume that workers equilise real wage and marginal disutility of work, is to assume that they bargain for real wages. Wage bargains between the employers and the workers are in respect of money wages and not real wages. The fact of the matter is that there is no method by which the labouring class can fix their own real wage. They have no power to bring the money wage to such a level that its value conforms to marginal disutility of work.

The classical economists<sup>6</sup> never attempted to analyse how bargains for money wage influence the real wage. Probably they considered it unimportant. They seem to have held that price level depends on the quantity of money and not on the rate of wages. That their theory could hold sway for such a long time can be explained only by the fact that no serious attempt was made to analyse the relation between changes in the general level of money wages and of real wages.

2 *Impossibility of involuntary unemployment.* The second assumption is that there can be no involuntary unemployment. This

3 The General Theory Of Employment Interest And Money p. 22

6 The term, as used by Keynes, includes Marshall and Pigou in addition to Say Ricardo and Mill.

assumption is an obvious corollary of the first assumption. To assume that workers supply labour up to where wages equal marginal disutility of work, is also to assume that if there are any unemployed workers, they are voluntary. That is, unemployment exists only because the unemployed refuse to work unless wage rate is higher. Even frictional or structural unemployment is compatible with their theory, but involuntary unemployment cannot exist, or at least cannot persist.

This is again contrary to experience. In periods of depression there are large numbers of workers who fail to secure employment even though they are prepared to work, not only for the current wage, but even at a lower wage rate. Their unemployment is neither frictional, nor structural, nor voluntary. And neither are workers more truculent nor less productive in a period of depression than in boom. Classical theory fails to recognize the fact of involuntary unemployment.

3. Supply creates its own demand. The third assumption of Pigovian analysis is Say's law, viz., that supply creates its own demand. The implication of this law may be stated as follows: Costs of production of aggregate output are earned as incomes. These incomes are either spent or saved. That which is spent constitutes demand for consumption goods. That which is saved creates demand for investment goods. Aggregate costs are the aggregate supply price. Aggregate outlays are the aggregate demand price. The two are always equal. Thus, supply creates its own demand, means that aggregate supply price and aggregate demand price are equal for all levels of output. There is then no reason why output should not switch itself to the level of full employment.

That this is a wrong assumption can be understood only when we have studied, at least briefly, Keynes' theory of employment. We will now give a summary treatment of his theory.

#### KEYNES' PRINCIPLE OF EFFECTIVE DEMAND

The level of employment in a country depends upon conditions of aggregate demand and aggregate supply. Hence concepts of aggregate demand and aggregate supply curves (functions) are fundamental to Keynes' analysis.

Aggregate demand function. Aggregate demand curve, strictly speaking, is the curve relating the expected sale proceeds with various volumes of output. But Keynes defines it as the curve relating various quantities of employment with the sale proceeds which their outputs are expected to yield. There are three possible justifications for it. First, he is interested in tracing the determinants of employment rather than output. Second, output and employment—in the short period when technique and resources can be taken as given—are positively related, both increasing and decreasing together. Third, there is no physical unit in terms of which quantities of all commodities can be expressed, therefore amount of labour employed is used as an index of the size of the output.

When we draw the demand curve for a commodity, we represent price per unit on the vertical axis and the quantity expected to be demanded on the horizontal axis. The aggregate demand curve differs from such a curve in two respects. First on the vertical axis is shown not price per unit but the total price of aggregate output. Secondly, on the horizontal axis is shown not the size of the output but the amount of employment to which that output gives rise.

For different volumes of employment the proceeds, which entrepreneurs expect to receive from the sale of corresponding outputs, are different. With zero employment expected sale proceeds will be zero. As more labour is employed output produced is larger and sale proceeds are greater. If net selling sale proceeds are associated with larger employment and vice versa. The aggregate demand curve, therefore, starts from the origin and slants upwards to the right. It is worth noting that the aggregate demand curve slants up to the right in contradistinction to the demand curve for a commodity which slants down.

*Aggregate supply function.* There is a certain minimum amount of sale proceeds which employers, all taken together must get to produce a given volume of output. This is the supply price of that output. The supply price for different outputs is different. Once again, strictly speaking, an aggregate supply function or curve should relate various volumes of output with their supply prices. But, for reasons given above, it is better to define it as the curve relating supply prices of various outputs to the amounts of employment to which those outputs give rise. Thus along the vertical axis are shown the supply prices and along the horizontal axis are represented amounts of employment.

Supply price of a given aggregate output being the minimum which entrepreneurs must get to produce it equals the cost of that output. An individual entrepreneur includes in his costs the payments on account of services of factors used, values of materials used and depreciation of assets through use and his own minimum return. These three items are respectively called factor cost, user cost, and normal profit. Now, in calculating aggregate cost of the whole output, user cost must be excluded because otherwise it would be either counting many costs more than once or it would be counting values which do not create incomes. Producers of materials, for instance, have included their values in their costs, so the users of materials need not include them when the purpose is to find aggregate cost.

With zero sale proceeds, output and employment will also be zero. Larger outputs will be produced only for larger sale proceeds. This means that higher amounts of employment are associated with larger sale proceeds. In other words, the aggregate supply curve, like the aggregate demand curve, starts from the origin and slants up to the right.

When no more workers are available for employment, further increase in sale proceeds will be associated with the same amount of

employment. That is, after a point the aggregate supply curve will be vertical.

*Effective demand.* In Fig. 29.1, employment is represented along  $x$ -axis and sale proceeds along  $y$ -axis.  $D$  is the aggregate demand curve and  $Z$  the aggregate supply curve. The former shows sale proceeds *expected* from various levels of employment, and the latter shows sale proceeds *necessary* to induce different volumes of employment.

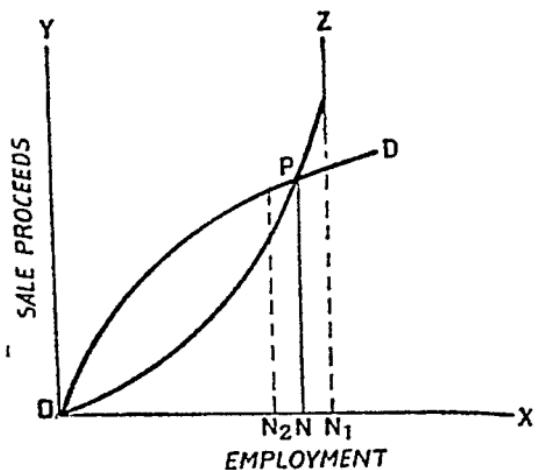


Fig. 29.1.

The two curves intersect at  $P$ . This is the point of equilibrium. Obviously, then, equilibrium will be established with employment  $ON$ . At this point the entrepreneurs expect

to earn maximum profits. Any other level of employment will reduce their profits. For instance, with employment more than  $ON$ , say  $ON_1$ , expected sale proceeds fall short of the supply price. Profits will be less than normal (or even negative). On the other hand, with employment less than  $ON$ , say  $ON_2$ , expected sale proceeds stand above the supply price. There will be an inducement for entrepreneurs to employ more persons. Thus, there will be no equilibrium unless employment stands just at  $ON$ .

Evidently, then, at any given time, there is only one level of employment at which equilibrium will be established. This is the point at which aggregate demand price equals aggregate supply price. The point on the aggregate demand curve, where it is intersected by the aggregate supply curve, is called the point of effective demand. Employment is determined by effective demand and equilibrium established by effective demand is not necessarily at the level of full employment.

*Further elucidation.* The aggregate supply function depends mainly on the physical conditions of supply. Considerations relevant to it are quantities and qualities of available factors of production and state of knowledge and technique. These are topics which we have already discussed. Keynes rightly holds them as familiar topics and, taking aggregate supply function as given, discusses aggregate demand function in details. The aggregate demand function relates expected sale proceeds to employment. The expected sale proceeds may be split up into sale proceeds of consumption goods and the sale proceeds of new investment goods. If  $D$  is the aggregate demand,  $D_1$  the demand for consumption goods and  $D_2$  the demand for investment goods, then—

$$D = D_1 + D_2$$

As total employment arises out of the demand for consumption goods and investment goods, increase in employment will come either from an increase in expenditure on consumption goods or an increase in investment. The aggregate demand schedule at any time is the sum of consumption demand schedule and investment demand schedule

We have seen that for every realised level of employment, aggregate demand will equal aggregate supply. Now,  $D = D_1 + D_2$ . Hence in position of equilibrium  $Z = D_1 + D_2$

$D_1$  is a function of income. With an increase in employment, income increases. As income increases expenditure on consumption also increases. But increase in consumption expenditure is not as much as increase in income. The increased employment causes increase in aggregate supply price. The new level of employment will be maintained if the difference between the new level of income (or aggregate supply price) and the new level of consumption expenditure is bridged by investment i.e. if  $D_2 = Z - D_1$ . If investment outlay is less, entrepreneurs will suffer losses because aggregate demand price will stand below aggregate supply price. Employment will be reduced. On the other hand, larger investment would increase demand, incomes, and employment.

Given the rate of new investment and the proportion of aggregate consumption to aggregate income, there can be only one level of employment at which equilibrium will be established. If this level happens to be one of full employment it will be a mere accident. For, full employment will exist only if investment just equals the difference between aggregate supply price of output resulting from full employment and the amount which will be spent out of it on consumption.

*Diagrammatic elucidation* In Fig 29.2, aggregate income is shown along  $x$  axis and aggregate output along  $y$  axis. Since the two will have equal values at all levels, the line  $O4$  which correlates them, is a straight line inclined at  $45^\circ$  to either of the axes.

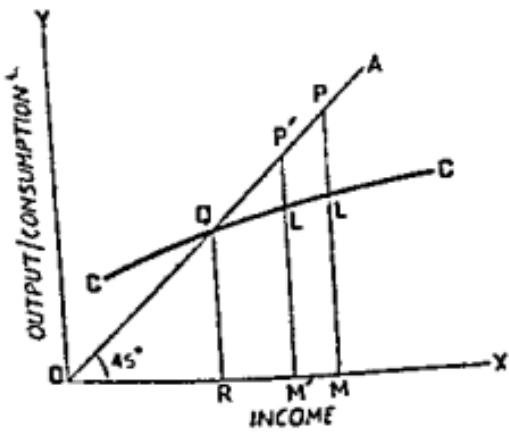


Fig 29.2

income and consumption expenditure widens

CC is the curve giving consumption expenditure corresponding to different levels of income. With income less than OR, consumption expenditure is more than income. When income is OR, the whole of it is spent on consumption. As income increases beyond OR, gap between

The point of effective demand will be on  $45^\circ$  line. It will be that point where investment equals the difference between consumption expenditure and income. For instance, if investment is  $P'L'$ , then income will  $OM'$  ( $P'M'$ ). Expenditure on consumption will be  $M'L'$ . And employment will stand at the level corresponding to income  $OM'$  (or  $P'M'$ ). If  $OM$  is the income corresponding to full employment, then full employment will be attained if investment happens to be  $PL$ .

*Contrast with Classical view.* J. B. Say had held that, since supply creates its own demand, aggregate demand price will be equal to aggregate supply price for all levels of output. If we were to redraw Fig. 29.1, on the assumption of Say's law, then our curves  $D$  and  $Z$  would coincide for all levels of employment. There being no bar to full employment, competition among the entrepreneurs would lead to expansion of employment till there is no involuntary unemployment. But the assumption of coincidence of the two curves throughout their lengths is invalid.

The two approaches can be more clearly contrasted with the help of Fig. 29.2. Say's law assumes that investment outlay will always stand at such a level that full employment is achieved. There is, however, no reason to believe that it will be so. Investment is determined by profit expectations from investment and the rate of interest.<sup>7</sup> It does not in any significant manner depend upon national income. Increase in employment (and income) may not by itself lead to an increase in investment. If investment does not increase appropriately, increase in employment cannot maintain itself. It will reduce itself to a level at which  $D_2 = Z - D_1$ .

Defect in the Pigovian formula  $N = \frac{q Y}{W}$  can also now be exposed.

That formula assumes that  $N$ , i.e., employment, can be increased by reducing  $W$ . This assumption can be criticised on two grounds. First, taking into account the conditions which obtain in the world today, it is incorrect to assume that wage rates are flexible. Trade unionism is strong enough everywhere to resist wage cuts. The second objection is a more fundamental one. The assumption implies that changes in  $W$  leave  $Y$  unchanged. But that is not so. When wages fall, expenditures are reduced and incomes fall. In other words, with a fall in  $W$ , equilibrium would come about at a new level of incomes. Employment could then increase only if  $q$  increased as a result of substitution of labour for other factors. In one word, primary determinant of employment is  $Y$  and not  $W$ , and when  $W$  is reduced,  $Y$  falls as a result of which employment is apt to decrease rather than increase.

#### SAVING EQUALS INVESTMENT

*Definitions.* Since Keynesian Economics is that of aggregates, the terms saving and investment mean respectively aggregate saving

<sup>7</sup> See below, pp. 387-9.

and aggregate investment of the whole community. Investment means creation of new assets or addition to the existing stock of real capital. Investment by an individual does not necessarily mean social investment. For instance, when a man requires an old investment good—security, equity or cash—someone else must part with the investment good. The latter will have dis invested an equal sum and the two cancel out completely.

Saving is the excess of income over consumption. An act of saving on the part of an individual does not necessarily lead to social saving. If his saving is not matched by investment, his failure to spend reduces incomes of others and hence their ability to save. That is, though he saves more, others will save less and on the whole there may be no saving. In calculating the aggregate saving of the community, we must take into account not only savings but also dis-savings.

*A fundamental principle.* One fundamental principle in Keynesian Economics is that saving is always equal to investment. This according to him, is so by definition.<sup>8</sup>

For

$$\begin{aligned} \text{Income} &= \text{Value of the Output} \\ &= \text{Consumption} + \text{Investment}, \end{aligned}$$

$$\text{or} \quad I = C + I$$

$$\begin{aligned} \text{Also,} \quad \text{Saving} &= \text{Income} - \text{Consumption} \\ \text{Income} &= \text{Consumption} + \text{Saving} \end{aligned}$$

$$\text{Or} \quad I = C + S$$

$$\text{Hence,} \quad I = S$$

Those who save make their decisions independently of those who invest. Saving at any given time depends on the level of income. Investment, on the other hand, does not, in any significant manner, depend on income. It depends on profit expectations from investment and rate of interest. Thus the two sets of decisions regarding saving and investment are made independently of each other. Yet equality between the two is brought about by changes in income. When investment increases, it leads to more employment. Output and income rise. A rise in income increases the community's ability to save. The income rises to such a level that saving on it equals the increased investment.

<sup>8</sup> *Capital Theory*, p. 62.

*Diagrammatic exposition.* The above principle, that saving and investment must always be equal, can be well explained with the help of Fig. 29.3. In this diagram, investment is suppose to be completely independent of income.<sup>9</sup>

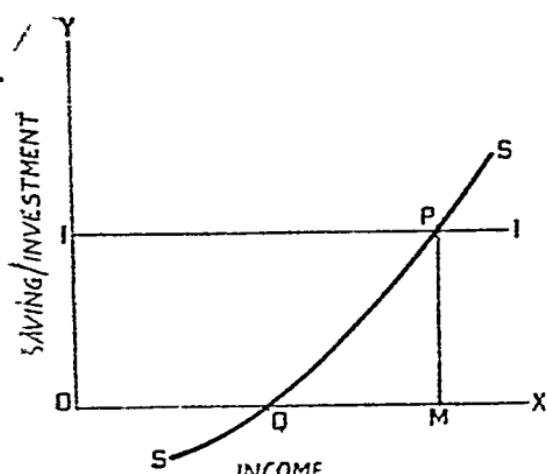


Fig. 29.3.

comes up to the level  $PM$ .

Up to income  $OQ$ , saving is negative. As income increases beyond  $OQ$ , saving increases at a progressive rate. When income is  $OM$ , saving and investment are equal. Thus investment  $I$  raises income to the level of  $OM$  so that saving

*Difference between planned saving and investment.* Though actual saving and actual investment must be equal in any period, planned saving may differ from planned investment. When the community plans to invest more than it plans to save, there will be an increase of income. Realised income being higher than expected, people may spend more or save more. If they save more, actual saving will be more and will equal investment. If they spend more, dealers will be left with smaller stocks than they had thought, so that investment comes down to the level of saving. Or, it may be that there is some increase in saving and some reduction in investment from the planned levels and the two are equal. Conversely, when planned saving exceeds planned investment, income will fall and, by consequent changes in saving and expenditure on consumption, an adjustment will be brought about. In any case, income so adjusts saving and investment that their realised amounts are equal.

#### MARGINAL PROPENSITY TO CONSUME

*Meaning of propensity to consume.* We have already noted that aggregate demand is constituted of expenditure on consumption goods and outlays on investment goods. The chief determinant of expenditure on consumption at any given time is income. The relation between the two variables is called propensity to consume. Propensity to consume, therefore, is a schedule or statement showing expenditures on consumption at various levels of income. The following is a part of an imaginary schedule of propensity to consume.

9. In fact it is not so, because when income rises, better techniques become available and efficiency increases. So promise of profits increases which raises investment and incomes.

TABLE 29 a

Income	Expenditure on consumption (Rs crores)
100	95
110	103
120	110
130	115

Curve representing such a schedule, that is, the one showing the relation between income and consumption, is called consumption function. As income increases, expenditure on consumption increases. Consumption function, therefore, slants up to the right.

There are other determinants also of expenditure on consumption. These may be classified into subjective factors and objective factors. In the former category are included all those considerations which weigh with individuals in deciding how much to save. We have already studied these factors under the heading capital formation. Objective factors are windfall gains, changes in expectations, changes in the rate of interest and in the fiscal policy. These factors are important from the long-run point of view. In the short run it is only violent changes in these factors which can change propensity to consume.

Now, every increment in income is divided between consumption and investment. Hence, if marginal propensity to consume is less than unity, marginal propensity to save must be positive. This can be shown algebraically;

$$\Delta Y = \Delta C + \Delta I.$$

$$\text{Or, } \frac{\Delta C}{\Delta Y} + \frac{\Delta I}{\Delta Y} = 1$$

As  $\frac{\Delta C}{\Delta Y}$ , the marginal propensity to consume, is less than unity,  $\frac{\Delta I}{\Delta Y}$ , the marginal propensity to invest, must be positive.

### THE MULTIPLIER

Meaning. Mr. R. F. Kahn was the first economist to introduce the concept of multiplier in economic theory. In his article "The Relation of Home Investment To Unemployment",<sup>10</sup> he defined multiplier as a coefficient relating an increment of primary employment to total employment caused by a given investment. Suppose, for example, the government spends Rs. 1 crore on public works. Some employment is thus created. This is primary employment. A part of incomes created by this expenditure will be spent by the recipients which will give rise to further employment and incomes. This process proceeds on till the "wave" has spent itself. Hence the total increase in employment is more than the primary employment caused by the expenditure. For instance, if  $N$  is the total increase in employment and  $N_1$  the primary employment, then;

$$N = k N_1$$

where  $k$  is the employment multiplier.

Keynes replaces the concept by that of an investment multiplier, which is the coefficient relating an increment of investment to total increment of income caused by it. If  $I$  is the income, the investment, and  $k$  the multiplier, then;

$$I = k \cdot I \text{ or, better still, } \Delta Y = k \cdot \Delta I$$

The same amounts of sales receipts would cause different amounts of employment with different techniques.  $k$  and  $k$  are, therefore, different. But on our assumption that in the short-run relation between income, output and employment is one of proportionality,  $k$  and  $k$  will be equal.

Relation with marginal propensity to consume and save. A new investment (of say, Rs. 1 crore) by the government will immediately create incomes worth the same amount. How much will be the secondary increase in incomes, depends upon what proportion of new incomes is spent on consumption, i.e., upon the marginal propensity to consume. The higher the marginal propensity to consume of the primary income recipients, the more will be the secondary incomes. Similarly, the

<sup>10</sup> *Economic Journal*, June 1931, p. 173.

higher the marginal propensity to consume of the recipients of the secondary incomes, the larger will be the tertiary incomes and so on.

When the marginal propensity to consume is zero, the new incomes will not be spent further, so that  $k = 1$ , and the total increase in incomes is equal to the primary increase. On the other hand, if marginal propensity to consume is unity, all new incomes will be spent—so that aggregate increase in incomes will be infinite.

Let us take a simple arithmetical example. Suppose the marginal propensity to consume is  $9/10$ , and remains the same throughout all stages of division. Then an investment of one rupee will increase incomes by

$$1 + \frac{9}{10} + (\frac{9}{10})^2 + (\frac{9}{10})^3 + (\frac{9}{10})^4 + \\ = 10$$

This is the multiplier. Incidentally, this arithmetical example brings out an important fact. When marginal propensity to consume is  $9/10$ , marginal propensity to invest is  $1 \times 9/10 - 1/10$  and the multiplier is 10. Hence investment multiplier is the reciprocal of the marginal propensity to save.

*Significance* The concepts of marginal propensity to consume and the investment multiplier are thus directly related. Their importance in guiding government policy is obvious.<sup>11</sup> The purpose in depression, for instance, being to increase incomes investments must be made in such a manner that investment multiplier comes to be high. In other words, the government must endeavour to create incomes for, or to add to the incomes of, those who have a high propensity to consume. Otherwise, multiplier effects will be small and large investments will become necessary to bring about given desired results.

It must also be noted that the primary guide in the choice of avenues of investment is the multiplier effect rather than utility or profitability of the works undertaken. Investments may be preferred to, say, digging holes and filling them up to that in an income-yielding asset, just because the multiplier effect in the former is much greater than the same in the latter.

### INDUCEMENT TO INVEST

Investment means producing more than is consumed. It may take the form of increase in the stocks of finished goods, but its more important form is manufacture of machines and tools and construction of buildings. There are two determinants of investment, i.e., marginal efficiency of capital and the rate of interest. We have already studied Keynes' liquidity preference theory of interest. Let us consider the other determinant of investment.

<sup>11</sup> What follows regarding depression is true *mutatis mutandis* of booms also.

## MARGINAL EFFICIENCY OF CAPITAL

*Marginal efficiency of a particular asset.* It is better to start with marginal efficiency of a particular type of asset to an individual. It may be defined as the *expected rate of return* from an additional unit of such an asset. Calculation of this rate of return is interesting. Let us suppose that the asset under consideration is a kind of machine which, let us assume for simplicity, has a life of three years. Further suppose that the machine is expected to yield returns  $R_1$ ,  $R_2$  and  $R_3$ , respectively in three years. The following points need be understood,—

1.  $R_1$ ,  $R_2$ , and  $R_3$ , exclude running expenses but include depreciation of the machine.

2. It is not necessary that  $R_1$ ,  $R_2$  and  $R_3$  are equal. In fact most probably they will not be equal. Ordinarily, the returns will diminish progressively because, as time passes, the machine wears out. But it is possible that business conditions are expected to improve with the passage of time, and, therefore, the *expected* returns increase progressively.

3.  $R_1 + R_2 + R_3$  is the cost of the asset *plus* the earning from the asset. Earning from the asset refers to the rate of interest expected to be earned on the investment. If  $R_1$ ,  $R_2$ , and  $R_3$  are discounted at this rate, then the sum of the three discounted values will equal the cost of the asset. This rate, at which expected yields, or what Keynes calls "prospective yields", must be discounted to make the balance equal to the cost of the asset, is the marginal efficiency of this asset. In other words, marginal efficiency of a particular type of asset is the expected rate of earning from a marginal unit of that asset.

4. Cost of the asset does not mean its market value but its replacement cost, that is, the cost incurred if a new unit of such an asset were produced.

It must be now obvious that if marginal efficiency of a particular asset exceeds the market rate of interest, the individual under consideration will invest more in that asset till its marginal efficiency equals the prevailing rate of interest.

Marginal efficiency of capital in general. Marginal efficiency of capital to the community at any given time is the highest rate of return which can be earned from an investment on an additional unit of any kind of asset. It shows the return from an additional unit of the most remunerative asset.

As investment in any particular asset at a given time increases, its marginal efficiency diminishes on account of two reasons. First, more of this asset means more of the product produced by this asset and, hence, the price of the product is apt to fall. Secondly, as more of the asset is produced, the cost of production is apt to rise. Thus, on the one hand, the value of "prospective yields" / D : D + P I ... I

falls and, on the other, replacement cost rises, so that net marginal earning from the asset falls. Hence the marginal efficiency curve of a particular asset falls.

As the marginal efficiency curves of all individual types of assets fall, marginal efficiency curve of capital in general will also slant down towards the right. Investment is pressed up to the point where marginal efficiency of capital equals the rate of interest.

In Fig 29.4, x-axis shows investment and y axis the marginal efficiency of capital. M is the marginal efficiency curve of capital. If the rate of interest is  $OL$ , investment will be  $PQ$  or  $OQ$ . At a higher rate of interest investment will be less, and vice versa.

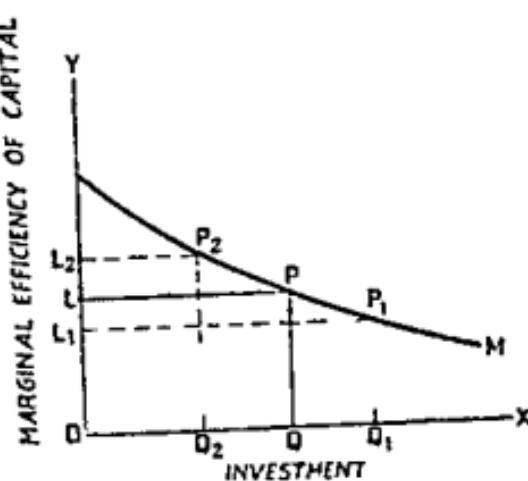


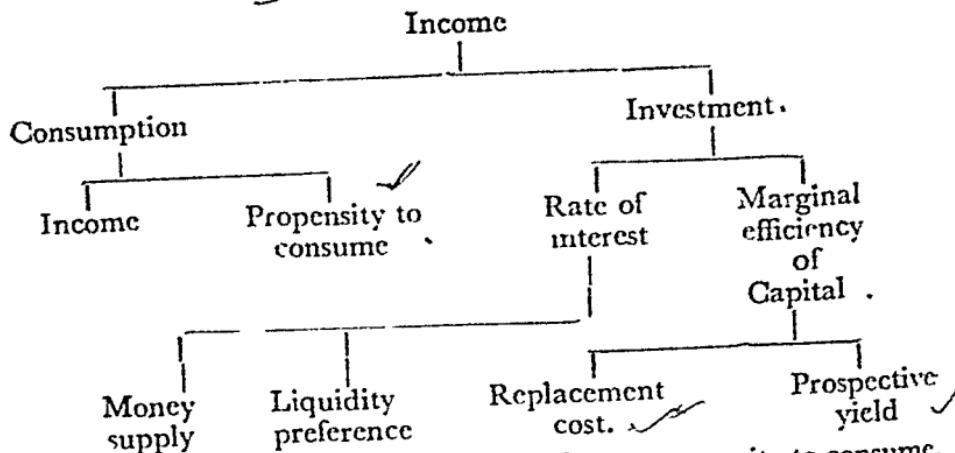
Fig 29.4

Keynes uses the term marginal efficiency of capital in preference to other terms like marginal productivity or marginal utility of capital. This is because he wishes to stress that it is not the marginal return at any time but the entire series of returns of "annual prospective yields" which form the basis of calculation. It is the precarious basis on which future yields have to be calculated which is important. Not only economic, even political and other factors, enter into the picture. Moreover, the stock exchange values play their part. Stock exchange values are determined by estimates of mass psychology or on the basis of existing conditions. Current conditions play an important part. When some change comes it reacts violently on the views of the people.

Thus estimates about the prospective yields are based upon multiplicity of factors. Most of these factors are unpredictable. Changes provide violent reactions. It is for all these reasons that these estimates are to a large extent responsible for bring about phases of prosperity and depression.

#### DETERMINANTS OF EMPLOYMENT

*General scheme of things:* Income is the chief determinant of employment in the short period. To trace the factors on which employment depends, we must find the determinants of income. The following picture gives a schematic statement of the determinants of income.



The three determinants of income obviously are propensity to consume, the rate of interest and marginal efficiency of capital. Let us consider them one by one.

*Propensity to consume.* If propensity to consume is increased, income will rise. But propensity to consume is determined by the habits of the people and habits are not easy to change. There is, however, one way out. Propensity to consume of every individual is a function of his income. The lower the income, the higher the propensity to consume and vice versa. Hence propensity to consume of the community as a whole can be increased by transferring incomes from the rich to the poor. This can be done by budgetary policies, i.e., by taxing the rich and spending the same to create incomes for the poor, or even by giving out doles to the poor.

*Marginal efficiency of capital.* Marginal efficiency of capital depends upon expectations. It is comparatively easier to shake the confidence of the people than to reinstate it. For instance, by ill-chosen taxation policies the government may succeed in alarming the people. But if the purpose be to revive optimism and faith in the future, the task is hard, if not impossible.

*Rate of interest.* Hence, in periods of depression, rate of interest appears to be the best front to attack. Of course, liquidity preference depends on psychological factors, but quantity of money available to the public may be increased so that the rate of interest falls and more investment projects promise to be profitable. We have, however, found in Chapter XXVII that interest rate policy is a fair weather friend. When the malady is desperate, i.e., when depression has sunk employment to very low levels and the gloom is deep, manipulations of the rate of interest may prove ineffective.

*The effective method.* The government can directly increase investment. It is in a position to increase both consumption as well as investment. And in the case of the latter, the government need not care about the prospective yield. It can spend or invest in such a way that the multiplier effect is high. By giving doles or jobs to

the unemployed and by handing over purchasing power to those whose requirements of even necessities are not being fully met, it can create or increase incomes of such groups of people whose propensity to consume is the highest. Of course, it has to be careful in its choice of investment in that it does not compete away the private agencies. Otherwise, while public investment increases, private investment may decrease and results achieved may be far from what was planned.

Employment can be increased either by increasing consumption or by increasing investment. There are some people, like Prof Hobson, who hold that depression results from insufficiency of expenditure on consumer goods out of incomes. They find the explanation for depression in under-consumption. According to them, then, there is no other method of increasing employment except by increasing consumption. Keynes differs from this view. He holds in the first place, this school of thought fails to realise that employment can be increased as much by increasing investment as by increasing consumption. Moreover, Keynes is impressed by 'the great social advantages of increasing the stock of capital until it ceases to be scarce'.<sup>1</sup> Keynes, therefore, holds that it is wise to tackle the problem from both fronts simultaneously. While investment is increased, efforts must be made to increase propensity to consume. And, he adds, that there is room for both policies to operate together.

## CHAPTER XXX

### PUBLIC FINANCE

#### INTRODUCTORY

*Meaning and importance.* The term "Public Finance" has been variously defined. Armitage Smith has defined it as an "investigation into the nature and principles of State expenditure and State revenue." Dalton prefers the phrase "public authorities" to the word "State." Public authorities include all kinds of governments, from parish council or municipal committee up to national government. Bastable goes one step further and includes the question of financial administration and control also in it.

Of course public finance is a vast and expanding science and has in it matters of interest for the students of both Economics as well as Political Science. We as students of Economics need not concern ourselves with financial administration and control. We can devote our attention exclusively to the question of raising and spending revenue, and effecting adjustment between revenue and expenditure.

There are four broad sources of revenue of a government—commercial undertakings, taxes, loans, and printing of notes. Loans and taxes may be raised in the form of goods and services. Similarly, expenditure may take the form of using commodities and services thus secured. But such things rarely happen today. Almost the entire revenue of a modern State arises in the form of money. Hence we shall take into account only money-revenue and money-expenditure of public authorities.

Activities of the State have gone on increasing ever since organised governments came into existence. From a protector of the citizen against internal disorder and external aggression, the State has become today an organisation to look after and promote the welfare of the community. In its earliest stages its only duty was policing. Today it spends on all those items for which individuals are either unwilling or unable to spend. Individuals, as a rule, are not prepared to spend on lighthouses, museums, roads, etc. And few have resources enough to provide themselves defence, canals or railways. The State has undertaken to provide what are called social capital and external economies. Conversion of a police State into a welfare State involves expansion of its activities, and of expenditure as well as revenue. With extension in the range of activities of public authorities, public finance has become a subject of great importance.

*Assumptions.* A student of the science of public finance cannot content with just enumerating and classifying the various sources of revenue and heads of expenditure of the State. He must attempt

to trace uniformities in respect of raising and spending of revenue and thence, formulate laws. In absolute monarchies, sources of revenue and items of expenditure are primarily determined by the whims of the ruling kings. It is not possible to trace uniformities in the actions of the kings as a class. It is only in democracies that the conduct of public authorities is expected to conform to certain principles. Hence it is only with reference to democracies that we can speak of principles underlying the manner of raising revenues and incurring expenditures.

Many political and social considerations enter into decisions regarding revenue and expenditure policies of a public authority. Construction of a certain road may be preferred to the construction of a certain canal not because the road is considered to be of a greater utility to the community but because the people who will be benefited by the road are more vociferous or command more votes than those who will be benefited by the canal. Similarly taxes on alcoholic liquors may be imposed in preference to taxes on say books because of (non-economic) social considerations. A student of Economics has, however, to concern himself only with economic considerations and base his conclusions accordingly. Not that he is unaware of the existence of political and social implications of public finance, but that he limits his field of study to consideration of economic factors only.

The affairs of a State are run by its citizens and the citizens of every State are exposed to those weaknesses which are common amongst human beings. Some of them may be inefficient and some dishonest. The former waste public money because of lack of ability, the latter sacrifice communal interest over personal interest. Both create hurdles in the way of promotion of social welfare by the State. Reasoning is difficult to proceed unless we assume that there are no employees of either of these categories in the government.

Thus we make three assumptions (1) We are dealing with a democratic State (2) The State exists for the promotion of economic welfare of the community (3) The administrators are honest and they know their jobs.

#### PRIVATE FINANCE AND PUBLIC FINANCE

**Similarities** Public authorities like any individual, have their revenue and expenditure. While an individual is said to have saved or dissaved according as he spends less or more than his income, a public authority is said to have a surplus budget or a deficit budget, as the case may be. Every individual endeavours to derive maximum advantage from his income likewise a public authority is also expected to plan the disposal of its revenue in such a manner as yields maximum benefit to the public. There are however, important points of difference between public finance and private finance.

*Contrast.* 1. The income of an individual (apart from gifts and charities, if any) arises from the sale of services—personal services or the services of his property. The State is also a seller of goods and services, but these constitute a minor source of its revenue. Its main source of revenue, in ordinary times, is taxes. Taxes have no counterpart in the incomes of individuals.

2. An individual can augment his spendable resources from his savings or by borrowing. Both these methods are open to a public authority. But the latter can borrow from inside the country or from outside: it can raise an internal or an external loan. An individual on the other hand, cannot borrow from himself. In his case an internal loan has no meaning. Only external borrowing is possible. Moreover, a government is in a position to augment its resources by printing notes. Of course, this method is, in the modern times, open to the central government only.

3. An individual so distributes his income among the various items of expenditure that he gets maximum utility. The objective of a public authority is also maximum utility but the relevant concept in its case is social utility. The individual has to judge things for himself, the finance minister has to estimate the utility of expenditure to others.

4. An individual is interested in maximising his own income only. A wage earner, for instance, is interested in bargaining for the highest wage rate, unconcerned about how it affects the employer. A finance minister, on the other hand, must consider the effect on the people of the methods by which he raises revenue. He will choose those methods which cause the least burden.

5. An individual prefers present satisfactions to future satisfactions. The extent to which he thus discounts the future, depends upon his habits, his expectations and the like. But every individual does put some premium on ready delivery in comparison to a promise of future delivery. A State is a continuous entity. Individuals die; a people do not. A finance minister, therefore, does not, or should not, discount the future. He has to juxtapose future requirements with present requirements on an equal level to decide how he would dispose of the State revenue.

6. "Balancing the budget" is a virtue neither for the individual nor for a public authority. Discretion demands that an individual saves a part of his income to provide for rainy days and old age as well as to increase his resources and enhance his income. A good budget is a surplus budget. Discretion demands of a public authority, on the other hand, that it produces a surplus budget or deficit budget according as the one or the other is appropriate to occasion. Surplus budgets are advisable in periods of boom and it budgets in periods of depression.

## BUDGET

*What is a budget?* A budget is a statement of accounts giving estimates of revenue and expenditure during a period. Budgets of public authorities are drawn for a period of a financial year. Financial year of India starts on the 1st April and ends on 31st March in the following calendar year.<sup>1</sup> A government budget is presented by the finance minister to the legislature for its approval some time before the start of the financial year.

A budget gives sources of revenue, on the one hand, and heads of expenditure, on the other, showing respective sums against each. In India, as in so many other countries, a budget provides figures for three financial years—the previous year, the current year, and the following year. That is the budget presented in February 1956 gave figures in respect of April 1954–March 1955, April 1955–March 1956, and April 1956–March 1957. In respect of the previous figures for actual revenue and expenditure are provided. In respect of the following year only estimates known as budget estimates are given. In respect of the current year revised estimates—based upon the actual figures of ten months which have passed and estimates for the remaining two months—are given. Revised estimates are, evidently, nearer approximations to actuals than budget estimates.

Budget of the Government of India follows the pattern of Swedish budgets. It is divided into current budget and capital budget. In the former, revenue from taxes and income from commercial undertakings is shown and such items of expenditure are included which do not result in any income-yielding assets. In the capital budget only those heads of expenditure are included which give rise to income yielding assets. Repayment of loans are also shown here because these reduce obligations and release revenue which would otherwise go to pay interest on them. On the revenue side of the capital budget are shown public debts which are proposed to be floated or contracted during the year. The deficit in the two parts of the budget are met out of balances, or by printing of notes.

*Economic functions of budget.* One purpose of preparing the budget and presenting it to the legislature is to regulate and regularise expenditure and to properly administer it. It is a part of planned administration. It would however, be a mistake to consider a budget as just a cold statement of account or a mere method of control over administration. Every budget has important economic implications. Budgeting is, therefore, an important instrument of economic policy.

It is now customary in countries like India and England that presentation of the budget is accompanied by a statement purporting to give a broad survey of the economic situation obtaining in the

<sup>1</sup> British financial year is the same as ours. That of U.S.A. starts on 1st July and ends on 30th June in the following year. France treats Calendar year as the financial year.

country. Such a statement is considered necessary to enable the legislators to judge the merits of the budget. It is with reference to the prevalent conditions that the various provisions of the budget are to be evaluated. There are, however, some general functions which budgets—or public finance as such—are expected to perform. These are as follows:—

1. *Reduction of inequalities.* Revenue collection from the public implies diversion of purchasing power from the people to the State. Expenditure, on the other hand, increases their incomes by creating incomes, by giving grants like scholarships, unemployment benefits, etc., and by making available facilities of defence, education, roads, etc., etc. Thus operations, to which budgets give rise, bring about transfers of benefits from some people to some other people. Obviously, these transfers can be so regulated as to reduce the spending power of the richer sections of the community and to make benefits available to the poorer sections. Budgeting is, therefore, a powerful instrument for reducing inequalities of incomes and opportunities.

2. *Regulation of trade and production.* Taxes, when levied on the production and use of commodities, tend to raise their costs and prices and hence reduce their output and demand. Production of harmful commodities can thus be reduced. On the other hand, resources can be directed towards producing such goods and services which are necessary for social stability and general economic advancement but the production of which would not be undertaken by individuals. Items like defence and roads possess high social utility but their production does not promise much profit to the producer himself. A budget has to be judged also by the provision it makes for producing assets of high social utility.

3. *Encouragement of saving and investment.* Budgets can be so framed as to induce people to save and invest. When those parts of income which are saved and invested, are exempted from taxes, it constitutes an incentive for the people to save and invest more. For instance, in India people get rebate from income-tax in respect of those parts of their incomes which they pay as insurance premia or which they contribute towards their provident funds. Similar concession is given to corporations on that part of their profits which are ploughed back, i.e., which are invested in business by the corporations.

4. *Implementation of basic economic policies.* The most important economic function of budgets is to serve as instruments in the implementation of basic economic policies. For instance, in a period of depression budgets must be so framed that expenditures increase and create incomes for those sections whose propensity to consume is high. Similarly, in periods of boom, expenditures must be cut and spending capacity of the people curbed. In those countries, which have taken to a policy of planned economic development, budgeting is essential to ensure implementation of the plans. So, by taxes and subsidies it is possible to divert resources from some-

uses to other uses is planned. If, for example, the country is short of food, land may be diverted from less important uses to the production of food by appropriate taxation and expenditure policies. Lastly, if certain industries are to be protected from foreign competition, it is for the budget to impose protective duties on the import of such goods.

Thus, we find that budgets can be helpful in the achievement of short run as well as long run objectives of economic policy. Short-run objectives demand of the budgets to be anti cyclical in their impact. Long run objectives demand that they subserve to encouragement of saving and investment, to aiding planned development, and to reducing inequalities of incomes and opportunities.

### PRINCIPLE OF NET AGGREGATE WELFARE<sup>2</sup>

Principle of substitution pervades the whole field of economic activity. Public finance is no exception. It is this principle which provides a good guide to the finance minister, both in respect of taxation and expenditure, as well as adjustment between the two.

*Basic principle of expenditure.* The aim of public expenditure is (or should be) similar to the aim of private expenditure, viz., maximisation of total utility. Expenditures has to be so distributed among the various heads that marginal social utility is equalised. For, if marginal utility at any two points is unequal, total utility can be increased by shifting some amount of expenditure from those points where marginal utility is less to those where it is more. When marginal utility is the same in all items of expenditure, any disturbance would reduce total utility. Thus, the basic principle is similar to the principle of equi marginal utility, and may be called the principle of maximum social utility.

Every item of expenditure brings some collective benefit as well as benefit to some individuals. Collective benefit may be more prominent in some cases while individual benefit predominates in others. For instance, the former predominates in defence expenditure while the latter predominates in unemployment relief. It is both the advantages, individual as well as collective which together constitute social utility or social advantage. It is the composite of individual and collective benefits which has to be maximised.

Moreover, as has already been pointed out a people are a continuing entity. Individuals are not certain of their future, a people are. A statesman is as much a custodian of the interest of posterity as of the present generation. Social advantage, therefore, refers both to immediate as well as ultimate results of an expenditure.

Dalton enumerates three tests of social utility.<sup>3</sup> First is the preservation of the community. Defence against external aggression

and protection against internal disorders are, beyond any doubt, the foremost duties of every government. Second test is the increase in productive powers, or efficiency as well as improvement, in the organisation of production so that wastage through unemployment or under-employment of men and resources is the minimum. The third is reduction in distributive inequalities. These tests, it will be noted, are in line with the criteria of value judgment which we laid down in the first chapter.

*Basic principle of taxation.* Since the marginal utility of money to an individual increases as the sum left with him diminishes, marginal sacrifice resulting from taxation increases as the amount collected increases. In other words, in matters of taxation the law of diminishing marginal utility becomes the law of increasing marginal sacrifice.

Analogous to the principle of maximum utility we have here the principle of minimum sacrifice. If a given sum of money is to be raised from the people in the form of taxes, then the amount should be so distributed that marginal sacrifice is equal in all cases. Just as on the basis of the law of diminishing marginal utility we can show that when marginal utility in different uses is equal, total utility is maximum, quite similarly, on the basis of the law of increasing marginal sacrifice, we can demonstrate that when marginal sacrifice in different cases is equal, total sacrifice is minimum.

For instance, suppose there are two persons *A* and *B*, and the taxes imposed are such that marginal sacrifice of *A* is greater than that of *B*. Obviously then the aggregate sacrifice can be reduced by so changing the tax structure that the amount of tax paid by *B* increases and in the case of *A* it decreases. On the other hand, when marginal sacrifice is equal in the two cases, shifting of tax burden of, say, one rupee from one person to the other, will reduce the burden upon the former by marginal sacrifice and the increase of burden upon the latter will be greater. Any change will, therefore, increase the aggregate sacrifice.

As marginal utility of money to the rich is lower than the same to the poor, equality of marginal sacrifice can be achieved by taxing the rich more heavily than the poor. In fact, if the amount of revenue required to be raised is small, the whole of it may be raised from the richer sections. The turn of the poor may not come at all, because even when the amount required has been raised from the rich, marginal utility of money to them may still be higher than the same to the poor.

Thus the principle of taxation leads us to two other conclusions. First, the richer sections of the community are to be taxed, more heavily than the poorer sections. That is, the *rate of taxation* (per "income collected as tax) should be higher for higher incomes for lower incomes. Such a system is called progressive. The other conclusion is that it is not necessary that *all*

citizens must pay some tax. Non-payment of any tax be very poor sections is compatible with the principle of taxation.

*Principle of public finance.* In considering the basic principle of expenditure, we assumed that a given sum had to be spent by a public authority. On the other hand, in the basic principle of taxation, we assumed that a given sum had to be raised. Given the sum, we have a principle regarding how money would be raised and another analogous principle regarding how it would be spent. But how to decide upon the sum to be raised? The principle for it is discovered by considering the questions of expenditure and taxation together.

Every tax reduces purchasing power with the public. Hence every tax, considered by itself, causes a burden. But it is wrong to think of a tax without any reference to public expenditure to which it gives rise. Every tax is a burden if it is misspent. And every tax is good if the expenditure of its proceeds results in more social advantage than the burden caused by the tax.<sup>4</sup> This brings us to the basic principle of public finance. Taxation and expenditure ought to be extended so long as social advantage resulting from the margin of expenditure exceeds the burden caused by the marginal rupee raised as tax. Optimum of public finance is the point at which sacrifice caused by the marginal rupee of tax just equals the social advantage resulting from the expenditure of marginal rupee. Since at the optimum point aggregate net welfare resulting from public finance is maximum, the principle is known as the principle of maximum net aggregate welfare.

The optimum of public finance can be shown with the help of Fig. 30.1. Along the  $x$ -axis, are shown quantities of money spent or raised as tax.  $y$  axis, shows marginal benefit and marginal sacrifice, respectively, of different quantities.  $MS$  is the marginal sacrifice curve. It slopes upwards to the right because as the amount raised as tax increases, marginal sacrifice also increases.  $MB$  is the marginal social benefit curve. Obviously, it will slant down to the right. Up to  $OM$ , every additional rupee of tax causes less sacrifice than benefit. At  $OM$  marginal sacrifice equals marginal benefit. As the sum involved increases beyond  $OM$  marginal sacrifice exceeds

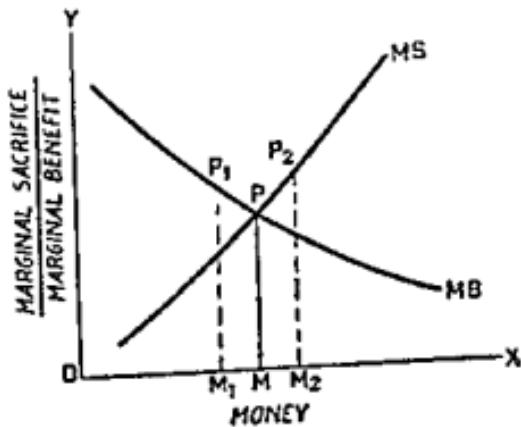


Fig. 30.1

<sup>4</sup> Thus the maxim that every tax is an evil is the wrong conclusion of a wrong approach.

marginal benefit.  $OM$  represents the optimum of public finance. By taxing and spending this amount the State will cause a maximum net increase in economic welfare of the community. An amount smaller or larger will cause a less increase in economic welfare than the maximum possible. This is the all-pervasive principle of substitution as applied to public finance.

*Difference from the case of individual.* There are two very important points of difference between the role of the principle of substitution in the field of public finance and in the field of individual finance. First, the individual's equalisation of marginal utility in various items of expenditure is instinctive, that of finance minister is to be deliberate. To act in a manner which maximises his total utility, an individual need not have any knowledge of the concept of marginal utility or of the principle of substitution. The finance minister must have a clear grasp of them if he is to maximise social welfare. In other words, the principle of substitution is in one case an analytical statement of what happens and in the other case it states what ought to be done. In the former case it is a generalisation resulting from a positive study; in the latter it is a norm laid down for the guidance of the finance minister.

The other point has already been raised in Chapter II. The principle of equi-marginal utility is based upon the law of diminishing utility. The principle of equi-marginal sacrifice and of maximum social benefit are also based upon the same law. But it is incorrect to invoke the sanction of the law of diminishing utility in the field of public finance because that involves inter-personal comparisons of utility. The law of diminishing utility is incompetent to give such a sanction. If appeal is made to social justice, that would be a different matter.

*Difficulties of implementation.* It is much easier to lay down a principle of public finance than to practise it. Many difficulties arise some of which are formidable.

1. *Burden of taxation is a composite quantity.* In assessing the burden of taxes, two steps of aggregation are involved. In the first place there are many effects of taxation. Some taxes lead to a cut in consumption, others to a cut in saving. The former reduce efficiency, the latter reduce investment. Also, taxation changes distribution of wealth. There is no method by which these effects can be added up.

Secondly, burden of taxes falls on different persons. Can we add up these burdens? As we know, the marginal utility of money to different persons is different. Hence adding up their money burdens would be as meaningless as adding up the temperatures of different kind of thermometers.

2. *Benefit of expenditure is a composite quantity.* Benefit of expenditure like the burden of taxation, is a composite quantity. Expenditure

gives security and protection. It increases the incomes of some people. It increases efficiency of individuals as well as of the productive system. These are, again, items which cannot be added up.

**3 Large units** The principle of equi marginal sacrifice and of maximum social benefit, and of equalising marginal sacrifice with marginal social benefit, can be implemented only when units involved are small. In the case of public finance units involved are large and indivisible. It is not a case of raising a few more (or less) rupees as tax and spending a few more (or less). Lacs and tens of lacs form the units. Nationalisation of land, digging of a canal, introduction of compulsory education, social insurance, unemployment relief—all involve large expenditures. Equalisation at the margins is difficult to achieve.

**4 Irrevocability** Principle of substitution can, as a rule, be implemented by the method of trial-and-error. Changes are unavoidable in search of the optimum. But in public finance, there are many obstacles in the way of introducing changes. In the field of expenditure, a great friction is caused by vested interests. In the field of taxation there is always the difficulty of finding out alternative sources of revenue. In both cases, there is always the difficulty created by the fact that a government is a slow-moving machinery. Changes take time to be effected and by the time changes are made, the situation might have changed.

**Conclusion** Thus theoretical difficulty is introduced by the fact that public finance involves inter personal comparisons of utility. The main practical difficulty lies in estimating burdens and benefits. The former loses much of its weight if we remember that comparisons are generally between groups and not individuals, and between groups individual peculiarities cancel out. As regards the second difficulty, it may be observed that it is better to lay down a correct principle and let the policy approximate to it as far as possible than not to lay down any principle at all and let the policy drift.

### ROLE OF PUBLIC EXPENDITURE

**1 Mode of influence** We have assigned to public expenditure the role of maximising social advantage. We have also stated what are the constituents of social advantages. It would be instructive to study now the mode of influence of public expenditure. Its benefit to the community arises from its effects on incomes and employment. If a government collected revenue only to spend the same sums on different items as individuals would have otherwise spent, its effects would be no more than that some resources will be wasted on collection of revenue. A public authority can produce effects on the economy either by varying the volume of expenditure or by changing the use of resources.

**1 Effects of variations in public expenditure** Variations in the size of public expenditure can be employed to counteract cyclical

fluctuations. The method is known as the method of compensatory spending. In a period of depression, total social outlay on consumption and investment is not sufficient to pitch national income to the level which will create full employment. Incomes and employment can be increased by increasing public expenditure on consumption as well as investment goods. The most appropriate method is "deficit finance" which means raising public expenditure above revenue. For, the crux of the problem in depression is the increasing propensity of the people to hoard. If additional expenditure is met by raising more taxes, people who are made to pay additional taxes may cut their expenditure to that extent and, hence, no net increase in expenditure may result. Even borrowing will not help if people lend out sums which they would otherwise have spent. Hence deficit finance is the surest method of increasing expenditure. Moreover, expenditure has to be so planned that it creates incomes in such sectors where the propensity to hoard is low.

As recovery advances, there should be a gradual tapering off of the public expenditure. When the state of full employment has been reached, compensatory spending is no more needed. If, however, boom conditions develop, public authorities have to enter the field once again. But this time compensatory spending must be negative. A period of boom requires that there are surplus budgets, so that the government mops up more purchasing power than it utilises. It will reduce aggregate spending by the community and thus will curb inflationary trends. Of course, expenditure has to be cut on such fronts where it is creating incomes for the people with high propensity to spend.

2. *Effects of the diversion of resources.* As public finance implies transfers of purchasing power from some people to some other people, it also involves transfer of resources from some uses to other uses. Such transfers may have favourable or unfavourable effects on production or distribution of wealth.

Favourable effects on production of wealth may be produced by increasing the productive efficiency of the people and by increasing propensity to consume. Expenditure on items like education, health, and housing, increases individual efficiency and expenditure on roads, railways, and research, etc., increases general efficiency of the economic system. Similarly, unemployment benefit and expenditures which open new avenues of employment increase marginal propensity to consume. As expenditure is mostly directed towards benefiting the poorer sections, it increases both efficiency as well as propensity to consume.

Public expenditure generally reduces inequalities of income.

Inequalities have generally been recognised as conducive to saving. Reduction in inequalities is, therefore, likely to reduce saving and thus adversely affect production. Similarly reckless and unplanned spending by government is likely to increase risks of business. This again is unfavourable to increase in production and employment.

A reduction in inequalities is now an accepted function of public finance. Public spending plays its role in this direction. Benefits to individuals like free education, social insurance, stipends, unemployment benefits, are designed to benefit the poorer sections of the society. Similarly, cleanliness services, water supply, etc., are as much available to the poor as to the rich. If such arrangements are not made by the public authorities, poor people would be greater sufferers. Thus, while tax collection can help in reduction of inequalities by approaching the rich, public expenditure performs the same function by benefiting the poor.

### INCIDENCE OF TAXES

*Meaning of incidence* Persons, from whom a tax is collected by the taxing authority, are said to bear the *impact* of the tax. Such persons may, however, pass on the money burden to others. The process of passing on the money burden of a tax is called 'shifting', and the persons, to whom the burden is passed on, are said to bear the *incidence*. If there is no shifting of a tax, its impact and incidence fall on the same persons. Such a tax is called a direct tax.

Incidence of a tax refers to direct money burden. It should be distinguished from direct real burden which means burden of the tax in terms of utility represented by tax money paid. Obviously, a given tax money paid by a rich man means a less direct real burden than if it is paid by a poor man. Similarly, direct money burden is different from indirect money or real burden. Indirect money burden refers to money lost over and above the tax money. For instance, when a tax is collected from the producers of a commodity, they attempt to shift the burden to the buyers. But some time elapses between the collection of money by the taxing authority from the producer and the latter recovering it (or a part of it) from the buyers. Meanwhile the producer loses interest. This is indirect money burden. Indirect real burden refers to the loss of welfare resulting from reduction in the consumption of the commodity.

Thus incidence of a tax is only one of the effects of a tax. There are other effects like the indirect money burden and indirect real burden. Even in respect of direct burden, direct real burden is more significant than direct money burden. Yet, the question of incidence has its own importance. Tax authorities ought to know from whose pockets the tax is being paid. Without such a knowledge they cannot implement the principle of public finance.

*Incidence of an indirect tax* The incidence of a tax can be shifted only through the process of exchange. The sellers of the taxed commodity endeavour to shift the burden by raising the price of the commodity. The incidence is said to have been shifted to the buyers to the extent that the price rises. The extent of rise in price depends upon the elasticities of demand for and supply of the commodity.

In Fig. 30.2  $DD$  and  $SS$  are respectively the demand and supply curves of the commodity.  $PM$  is the price. After the imposition of the tax, the price has risen to  $QT$ . But, while the buyers pay a price of  $QT$  per unit, the sellers receive only  $ST$  per unit. The balance  $QS$  is the tax per unit and is intercepted by the government.

For sellers, the price has fallen from  $RT$  to  $ST$ .  $RS$ , therefore, represents incidence on the sellers. For buyers, the price has risen from  $RT$  to  $QT$ .  $QR$  is thus the incidence on the

buyers. That the ratio of these two burdens, i.e.,  $RS/QR$ , depends on elasticities of demand and supply can be shown as under:—

$$\frac{\text{Elasticity of Demand}}{\text{Elasticity of Supply}} = \frac{MT/OT}{QR/PM} \div \frac{MT/OT}{RS/PM} = \frac{RS}{QR}$$

The higher the elasticity of demand and the lower the elasticity of supply, the less will be the burden on buyers and the more will be the burden on sellers. If demand is inelastic, or supply is perfectly elastic, the whole burden of the tax falls on the buyers. On the other hand, if demand is perfectly elastic, or supply is inelastic, the tax is wholly paid by the sellers.

It is immaterial whether the tax money is initially collected from the sellers or the buyers. If it is collected from the sellers, they attempt to pass on the burden to the buyers, and *vice versa*. But how far a group succeeds in shifting the tax depends on conditions of demand and supply. These conditions being given, incidence is divided between the two in accordance with elasticities of demand and supply.

Taxes on income and property are generally considered to be direct taxes. But there are few taxes which are not shifted at all. Take, for instance, earning of income, which can be viewed as selling of work or sacrifice of leisure. A tax on income discriminates against work. How much leisure would replace work, depends, on the one hand, on marginal utilities of work and leisure, and, on the other, on the rates and progression of tax. There is thus an exchange involved and the shifting of tax is possible. Similarly, when property is taxed, the incidence gets divided between participants in exchanges to "construction or lease of property gives rise.

### OTHER EFFECTS OF TAXES

*The complications.* As has been said above, incidence of taxation is only one of the effects of a tax. What we should really find is the aggregate effect of a tax on the welfare of the community. We have already noticed that the total burden of a tax is a composite of effects on consumption, production and distribution of wealth. This composite is difficult to measure, more so because many individuals, who are not equally rich or poor, are involved. There are three more facts to add to the confusion. First, taxes produce not only adverse effects but also some effects favourable to welfare. Secondly, taxes give rise to exchanges which diffuse the effects through the community. Lastly, a tax may be welcome to the community as a whole if the sum collected is spent one way and may be unwelcome if it is spent in another way. The problem is then to compare the pictures of two positions—one with tax and the other without tax. Obviously, one of the pictures has to be imagined and will in many details be imaginary. The composite effect of a tax or a tax system is difficult to ascertain. We may, however, enumerate the possible effects of some taxes.

**1. Taxes on commodities.** A tax on a commodity may be imposed on its production, import, sale or purchase. In any case, it is shared between the sellers and buyers, in accordance with elasticities of demand and supply. Unless the supply or demand is inelastic the quantity produced and consumed will be reduced. There will be a loss of consumer's surplus or consumer's welfare. That is not all. The tax itself may throw the commodity out of fashion. The loss of consumer's surplus will be large. If, on the other hand, the tax increases the "display value" of the commodity, loss of consumer's surplus will be small.

Demand for the related goods also changes. In the case of complements, there is a reduction in demand and output, and, therefore, there is a loss in consumer's surplus. Similarly with raw materials of the taxed commodity and goods for which the taxed commodity is a raw material. Demand for substitutes, and hence consumer's surplus derived from them, increases. Workers and producers employed in the production of substitutes gain, those employed in the production of other related goods lose.

Taxes levied on the production, sale or purchase of luxuries fall on the people with higher incomes. Taxes on necessities are regressive because they fall on the rich and the poor alike, and the poor have less capacity to pay. Outlay taxes, to yield enough revenue, have to be imposed on commodities of wide use and such commodities are no other than necessities. But if taxes on necessities are accompanied by taxes on luxuries, their regressiveness, and hence the intensity of their adverse effect on distribution, may be reduced.

**2. Taxes on incomes.** Taxes on incomes are generally progressive. Concessions are allowed in respect of members of the family. They

are, therefore, conducive to reductions in inequalities. This is one important merit which is claimed for taxes on incomes, as also for other direct taxes.

Efficiency of the people depends upon ability to work and will to work. Ability to work is not materially affected by taxes on incomes. For, incomes of certain level are exempted from paying taxes and such exemption limits are generally fixed at such a level as is considered necessary for maintenance of efficiency. Will to work is of course affected adversely, especially if tax-rates for higher slabs of incomes are heavy. It stays people from undertaking risky adventures. Two facts are, however, important in this respect. First, enterprising individuals take pride in owning large business and extending them. Secondly, the "pinch" of the tax is reduced with the passage of time. A new tax, or an increase in its rate, pinches more than when it has become old. Nevertheless, very high rates of income tax do discourage many businessmen from extending the size of their business.

It is said that capacity of the community to save is not affected by taxes on incomes, because proceeds of such taxes are after all spent and thus made available to the people. But in so far as taxes on incomes, and consequent expenditure, transfer incomes from the rich to the poor, they do reduce the community's capacity to save. In many countries rebates are allowed in respect of savings. Such provisions are encouraging to saving.

3. *Death duties.* Of the other direct taxes, we may briefly consider death duties or estate duties. These are said to influence production adversely through their effect on savings. It is alleged that when a person knows that a substantial portion of what he saves will go to swell the coffers of the State, his inclination to save—and, hence, his inclination to work hard and earn more—declines. This is correct in the case of the rich, especially when the rates of death duties on upper slabs are high. Small inheritance are not taxed. Moreover, even though a person's savings are taxed after his death, he can use them whenever he desires or requires to do so in his life-time. Hence will to save is not much affected by death duties, except in the case of a few with large incomes when the tax is very steep.

### DEFICIT FINANCE

*Meaning.* When there is a deficit in the budget, i.e., when expenditure exceeds revenue, the difference is financed either from the past balances or by printing of more notes. Broadly speaking, whichever of the two methods is employed, it is a case of deficit finance. But in recent days the term has come to be associated with financing the deficit by printing of more notes. Deficit finance on any sizable scale becomes essential when large sums are required for purposes of war or planned development. The government may resort to it

a period of depression also, when raising of prices, incomes, and buying power of the people is so desirable.

*Merits* Deficit financing scores over taxation and loans in some ways. It can go much further than taxation and borrowing. Much larger command over goods and services can be secured than is possible by taxation and borrowing. It is a subtle method by which the government can transfer purchasing power to itself without touching their pockets. It provides the path of least resistance because there is no immediate fear of resistance or agitation. Some people have described deficit finance as a forced loan. It is better to describe it as a concealed tax because it involves no repayment. And it is a kind of tax which involves no cost of collection.

*Demerits* The demerit of deficit finance lies in the dangers which it carries in its bosom. It has been generally observed that once deficit financing is done on any sizable scale, it is continued for some years. This is, not only because it is the path of least resistance, but also because the value of money falls as the process proceeds and, therefore, money requirements of the government go on mounting. Every year a larger quantity of money is required to meet given items of expenditure than in the previous year. Once inflationary spiral starts, it goes on feeding on itself. A stage may come when the government finds itself helpless. Rising prices, falling exchange flight of capital—all go a hand to put the economy out of gear.

It may be said that deficit financing, in that it causes a rise in prices, is stimulating to production and employment. True, and this is really needed in a period of depression. But otherwise, deficit financing is a dangerous instrument for stimulating production. For, ultimately it eats away more than it creates. Inflations experienced by Germany, and China have left behind lessons too grim to risk again.

Deficit finance, as a method of securing revenue, is bad taxation. As we know, all prices and incomes do not move together. Profits rise more rapidly than prices. Lag in fixed incomes is obvious and lag in wages is proverbial. Hitting the fixed incomes and wage earners hard, as deficit financing does, it accentuates inequalities in incomes making the rich richer and the poor poorer.

#### PUBLIC DEBT

*Productive and unproductive debt* Loans are said to be the best method of meeting capital expenditure. There is, however, no harm if capital assets are created from tax revenue. Similarly there is no harm if loans could mobilise hoards, and then were used for creating incomes and employment, even if they did not result in income yielding assets of the same value.

Nevertheless, a distinction is generally made between productive debt and unproductive debt. Productive debt is that part of the debt, expenditure of which has produced assets of at least equal value. Interest on these debts can be paid out of the incomes from the assets created by them. An unproductive or dead weight debt,

on the other hand, does not result in any assets, therefore interest on it must be met out of general revenues.

*Internal and external debt.* Classification of public debt into internal and external debt is of great significance. Internal debts are loans raised within the country while external debts are those raised in foreign countries. Payment of interest and principal of internal loans is a case of transfers of purchasing power within the country. It, therefore, means only a redistribution of resources. Payment of interest and principal of external debts involves an export of purchasing power. It is, therefore, a drain on the national income during the periods of payment. An internal loan, thus, only "binds" some revenue of the government for some years. An external loan causes, in addition, a payment out of goods and services every year.

Some people have attempted to measure the burden of public debt by the ratio which this debt bears to the annual national income. Such a measure has very little significance. The burden of the debt can significantly be measured in two ways. First, we may calculate the ratio which it bears to public revenue. For instance, if public debt bears to the annual public revenue, a ratio of 20:1, then we know that if 25 per cent of the revenue is directed towards repayment of debt, it will take eighty years to pay it off completely. This is, of course, on the assumption that public revenue remains the same through these long years. Another significant index is the ratio of external debt to national dividend. Such an index would give an idea of how long it would take to pay off the external debt if a given drain is allowed on the national dividend every year. For example, if external debt bears to national dividend a ratio of 2:5, then, exporting 5 per cent of the national dividend for this purpose every year, it will take eight years to clear off the foreign obligation.

*Postponing the burden to posterity.* Periods of war and planning are periods of heavy government expenditure. If war is won or if plans are carried to their successful conclusion, benefits accrue not only to the present generation but also to posterity. It is, therefore, rightly argued that burdens of such heavy expenditures should at least partly be borne by posterity. It is said that this can be achieved by financing parts of such expenditures by loans.

Now, let us take the case of a ... and let us assume, for convenience of argument, that the economy is divided into two sectors, the war sector and the civilian sector. Also assume that all goods which enter the war sector, are destroyed. In Fig. 30.3, circle  $G_1$  represents goods and

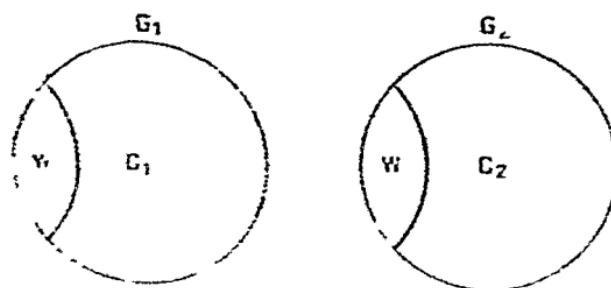


Fig. 30.3

services available in the current year (year I) and  $G_2$  represents goods and services available to a future generation in a future year (year II).  $W$  is the amount of goods and services for war. The problem is that  $W$  should come out of  $G_2$  in  $I$ , not  $G_1$ . If an internal loan is floated  $W$  goes to war sector and only  $C_1$  is left for the civilian sector in year I. In year II  $W$  is paid by the future generation to that very generation through, of course, the government. For, the government first raises war tax and then pays it off. Goods available to the future generation remain  $G_2$  plus  $C_2$ , i.e.,  $G_2$ .

Now suppose an external loan is floated. Goods and services to the extent of  $W$  come from outside. The aggregate with the present generation becomes  $G - W$ .  $W$  goes to the war sector and  $G$  is left with the civilian sector. In year II  $W$  is paid out  $G_1$ ,  $W$ , i.e.,  $G_2$  remains for the future generation. The burden has been shifted to posterity. The present generation of this country has received goods from the present generation of the foreign country. The future generation of this country will pay to the future generation of the foreign country. Through the foreign country, thus, goods and services have reached this generation from the future generation.

Hence if the purpose is to pass the burden of some expenditure on to posterity, this can be achieved only by financing the expenditure by external borrowing. Internal loans cannot fulfil this purpose.

*Merits of finding revenue by loans.* Loans do not produce any disastrous effects if deficit financing is likely to do nor are they resisted like taxes. A government is as a rule, considered to be a more reliable borrower than any other institution in the country. Lenders, therefore, generally advance loans quite willingly. And as loans reduce purchasing power of the people to the extent that they increase the same of the government there is no fear of inflationary trends unless large proportions of loans come from abroad. Moreover, if loans result in cut in consumption and are used for capital investment they will play an important role in capital formation. Similarly if loans lead to dishoardings of money in a period of depression and are spent to increase consumption, recovery may start.

*Demerits.* The main difficulty about loans is that they leave the revenue to be determined by the whims of the people. In periods of war and planning, when huge sums are required, loans may not be forthcoming in sufficient quantity to fill the gap between expenditure and taxation. Moreover, loans bind the future revenues of the government and thus introduce an element of inelasticity into the budgets. And if the loans are external, they cause in future drains on the national income which are burdensome, especially if proceeds of such loans have been spent for non-productive purposes.

## CHAPTER XXXI

### INTER-REGIONAL TRADE

#### THE CLASSICAL CONCEPT—INTERNATIONAL TRADE

*Internal trade and international trade.* Classical economists like Ricardo and Mill considered international trade and internal trade as two different species of trade. They defined international trade as trade between people living in different countries in contradistinction to internal trade which is trade between people living in the same country. The distinction obviously rests on the basis of political boundaries in that, while international trade crosses the political frontiers of a country, internal trade does not. Having thus distinguished between the two, they advanced a separate theory to explain the existence and direction of international trade. It is known as the theory of comparative costs. Formulation of a new theory becomes necessary if international trade differs fundamentally from internal trade. Let us see in what respects they resemble or differ.

*Resemblance.* It was realised by the classical economists that international trade resembles internal trade in some respects. Like the latter, it implies exchange of goods and services. In both the kinds of trade, money may serve as a go-between, but ultimately all transactions boil down to exchange of goods for goods, of services for services, or of goods for services. Secondly, as in internal trade, so in international trade the parties involved are the people. Of course, governments also purchase from and sell to other governments. Moreover, trade treaties are concluded between governments, sometimes promising to import or export specified amounts of specified goods. But when governments sign such trade treaties, they, in most cases, promise only to facilitate or encourage the specified imports or exports; they do not undertake to import or export themselves. That does not mean that governments never export or import. Every government does import many of its own requirements. In this capacity, a government is, however, only one of the dealers. International trade is not a trade between countries nor one between nations; a small part of it is between governments, but most of it is between the peoples. Lastly, international trade, like internal trade, is constituted of voluntary transactions. The government may prohibit trade in certain goods or it may impose (or increase or reduce) restrictions, but it does not compel dealers to purchase any given goods. People purchase foreign goods only when they desire to do so.

*Differences.* None could ever seriously claim that international trade differs from internal trade in that the former is a long distance trade while the latter is a short distance trade. Trade between Amritsar and Lahore involves a much shorter distance than trade between Amritsar and Madras, and yet the latter is internal trade while the former is international trade.

Some people have put forward the plea that international trade has to be treated separately from internal trade because the people of a country are always more particular to know their trade relations with other countries than with the other parts of their own country. Now, this attitude of the public may justify a separate compilation of foreign trade statistics, but it does not mean that a separate theory will explain this type of trade. A separate theory is needed only when the very character of the trade is different.

Classical economists raised one point of distinction which was considered fundamental. It related to the mobility of factors of production. It was held that factors of production move from one part of a country to another part with a much greater ease than from one country to another. In technical language, international mobility of factors of production is very low while internal mobility is high. Hindrances to international mobility of labour and capital have often been enumerated. Labour's mobility from one country to another is low because of the difficulties of language, customs general distrust of the foreigner, property laws, racial segregations etc., etc. Similarly international mobility of capital is low because of the difficulties of keeping a watch over assets, exchange difficulties, wars, blocked accounts, frozen assets, etc., etc. The classical economist realised that the difference between international and internal mobility of factors of production is one of degree. They, however, held that the difference of degree is so great that it is almost a difference of kind. On this basis they made an assumption, viz., that the factors of production are perfectly mobile within the country and perfectly immobile across the frontiers of a country. On the foundation of this assumption of international immobility, they built their theory of comparative costs.

#### THE MODERN CONCEPT—INTER REGIONAL TRADE

*Distinction of internal and international trade is unsuitable.* Modern economists, like Ohlin and Duncan, consider it inadvisable to classify trade on a political basis. For that reason the very choice of the name international trade, is considered unfortunate. We are more concerned with the economic distinction regarding mobility or immobility of factors. It is realised that large numbers of labourers and huge amounts of capitals have moved between countries in the past. Consider, for example, the number of Indians in Burma, Ceylon, Africa, Australia, etc. Also consider the extent of British, American, French and Dutch investments in Eastern Countries. If international mobility of factors is not zero, internal mobility of factors is not perfect either. For instance, there are many physical and psychological hindrances in the way of movements of Punjabi families to Madras and of Madrasi families to the Punjab. Mobility of factors is, thus, not co-terminus with political boundaries. All international trade cannot be distinguished from all internal trade on the basis of immobility of factors.

*Appropriate distinction is between regional and inter regional trade.* The theory of comparative costs is built on the assumption of immo-

*Assumptions.* To explain this theory it is customary to make many simplifying assumptions. These are —

1. There are only two regions, call them country *A* and country *B*.
2. There are only two commodities, call them *x* and *y*.
3. There is only one factor of production, call it labour, and let one labour-day constitute a "productive unit".
4. Both the commodities, *x* and *y*, are produced under conditions of constant costs in both the countries.
5. Labour cost theory of value is valid i.e., exchange value of a commodity depends on the labour employed to produce it.
6. All exchanges are made direct, that is barter system prevails and money is not used at all.
7. Trade between the two countries is free, i.e., there are no restrictions, whatsoever, on the movement of goods between the two countries.
8. There are no costs of transporting goods from one country to the other. This implies absence of carriage insurance, banking charges, etc.
9. The market is perfect, so that there is only one exchange ratio for all inter-regional transactions.

May it be noted that these are all only simplifying assumptions made to facilitate understanding. They are not fundamental to the argument. The only assumption fundamental to the argument is that of inter-regional immobility of factors of production.

*Three cases.* Three cases will be considered to establish the two truths of the theory of comparative costs.

TABLE 31-a

<u>Case I</u>	<u>Country A</u>	<u>Country B</u>
One productive unit produces	5x or 15y	10x or 10y

Exchange ratio before inter-regional trade       $x : 3y$        $x : y$

Country *A* can produce *y* cheaper, while country *B* can produce *x* cheaper. That is, country *A* has an absolute advantage in the production of *y* but an absolute disadvantage in the production of *x*. Hence, she has a comparative advantage in producing *y*. Similarly, country *B* has a comparative advantage in producing *x*.

A producer in country *A*, rather than producing 5*x*, will produce 15*y* and exchange it for 15*x* in *B*. Hence nobody in country *A* will produce *x*. Similarly, a producer in country *B*, rather than producing 10*y*, will produce 10*x* and exchange it for 30*y* in country *A*. Hence nobody in country *B* will produce *y*.

In the above argument we have assumed the exchange ratio to be  $x:y$  for producers of country  $A$  and  $x:3y$  for producers of country  $B$ . That cannot be as the market is perfect. There will be only one exchange ratio lying somewhere between these two ratios. Let us suppose that the ratio of exchange in the inter-regional market is  $x:2y$ . Our conclusion is still the same. A producer in  $A$ , rather than producing  $5x$ , will produce  $15y$  to exchange it for  $7\frac{1}{2}x$ . Similarly, a producer in  $B$ , rather than producing  $10y$ , will produce  $10x$  to exchange it for  $20y$ . Thus in country  $A$  only  $y$  is produced, and in country  $B$  only  $x$  is produced.

This case, however, does not lead us to any definite conclusion. Country *A* produces  $y$  in which it has both an absolute as well as a comparative advantage. Similarly, with country *B*. We cannot decide whether absolute cost advantage is the real determinant of inter-regional trade or comparative cost advantage. So, we pass on to the next case.

TABLE 31-*b*

<u>Case II</u>	Country A	Country B
One productive-unit produces	$15x$ or $20y$	$10x$ or $10y$

$$\text{Exchange ratio before inter-regional trade} \quad 3x:4y \quad x:y$$

Country  $A$  can produce both  $x$  as well as  $y$  cheaper than country  $B$ . That is, she has an absolute advantage over  $B$  in the production of either. But, obviously, her advantage is greater in the production of  $y$  than of  $x$ . Similarly, country  $B$  has an absolute disadvantage in both, but her disadvantage is less in the production of  $x$  than of  $y$ . Thus country  $A$  has a greater comparative advantage in  $y$ , while country  $B$  has a less comparative disadvantage in  $x$ . If absolute differences in costs determine the direction of inter-regional trade, then country  $A$  will produce both. If comparative differences determine it, then country  $A$  will produce  $y$ , while country  $B$  will produce  $x$ . Let us see.

One productive unit in country  $A$ , rather than producing 15 $x$ , may produce 20 $y$  and exchange it for 20 $z$  in country  $B$ . Hence it is not in the interest of producers in this country to produce  $x$  even though there is an absolute advantage over producers of the other country in producing it. They would do better if they import  $x$ . The case is analogous to that of a lady doctor who can cook meals better than a servant, but who would rather engage a servant for cooking 'to spare time' for the more lucrative job, i.e. medical practice. Similarly, three productive units in country  $B$  can produce 30 $y$ , but it would better to produce 30 $x$  and exchange it for 40 $z$  in country  $A$ . Thus, the exchange ratio, after trade has started between the two countries, will be between  $3x:4y$  and  $x:y$  but, as we have already

seen, this does not make any difference to the validity of the argument. Thus we see that country *A* specialises in the production of *y* and imports *x*, and country *B* exports *x* and imports *y*.

In other words, a country may be importing a commodity in which she has lower absolute costs or may be exporting a commodity in which she has higher absolute costs. Differences in absolute costs are, therefore, an determinant of inter-regional trade. The direction of inter-regional trade is determined by comparative costs. A region produces that in which it has a greater comparative advantage or a less comparative disadvantage, i.e., in which it has less comparative costs.

TABLE 31 c

<u>Case III</u>	Country <i>A</i>	Country <i>B</i>
One productive unit produces	20x or 20y	10x or 10y
Exchange ratio before inter-regional trade	$x:2$	$x:y$

This case brings out the fact that difference in comparative costs is an essential condition for the existence of inter-regional trade. Exchange ratio, here cannot be different from  $x:y$  after the trade starts.

Country *A* has an absolute advantage over country *B* in the production of both *x* and *y*, but comparatively she is equally well placed in both. There is no comparative advantage in either. Similarly country *B* has an equal disadvantage in both. In other words, there are absolute differences of costs but no comparative difference.

In this case, there will be no trade between the two regions. For, if country *A* produces 20x to exchange it for 20y in country *B*, or produces 20y to exchange it for 20x nothing is to be gained from either of these transactions. Similarly with country *B*. The conclusion, therefore, is that inter-regional trade will not exist if there is no comparative difference in costs and will exist if there is such a difference.

Our two truths are now evident. First, differences in comparative costs are the one and the only condition for the existence of inter-regional trade. Second, a region produces that in which it has a greater comparative advantage or a less comparative disadvantage.

#### MONEY PRICES AND INTER REGIONAL TRADE

*The problem* In the real world, when dealers in one region purchase a commodity from dealers in another region, it is because they find money price of the commodity lower in another region than in their own region. When they, on the other hand, sell a commodity in the foreign region, it is because the price there is higher and in the home region it is lower. Thus, those goods are

exported of which the money prices in the foreign regions are higher, and those goods are imported of which the money prices are lower outside. If this is a fact, as it is, then why do we not explain inter-regional trade in simple monetary terms? Cannot we, for instance, say that inter-regionally goods move in the direction of higher money-prices? If such a simple explanation could serve our purpose, we could be saved of the intricate comparative cost analysis.

*Money costs and prices are trade determining, not trade determining.* To answer this question, we have once again to recall our case III, in which one productive unit produces  $20x$  or  $20y$  in country *A* and  $10x$  or  $10y$  in country *B*. Let us keep all the assumptions, including the one regarding labour theory of value, intact but remove assumption number six. We thus introduce money into the scene but still assume that the same currency is used in both the countries. Let us call this currency "rupee". We start with equal wages in both the countries, say, Rs. 5/- per productive unit. Obviously, both the goods will be produced half as cheap in country *A* as in country *B*. Consequently, both *x* and *y* will begin to be exported from country *A* to country *B*. The latter having nothing to export back will, naturally, pay for the goods in rupees. Quantity of money in country *B* will diminish while in country *A* it will increase. Wages and prices in country *A* will rise and in country *B* they will fall till money costs and money prices in both the countries become equal. At that stage, the trade will come to a stop and will not be revived, unless some new factors change the situation.

Thus we find that the levels of money costs and money prices in the two countries are themselves the result of inter-regional trade movements. They are not the cause of these movements and hence cannot explain these movements. Inter-regional movements of goods are caused by comparative differences in the real costs and not by absolute differences in money costs and prices.

Even if we drop the assumption of the same currency in the two countries, our conclusion will be no different. In case the two countries have different currencies but both are on the gold standard, working of the mechanism will be similar to the above. As country *A* exports both the commodities, country *B* will export back gold which will reduce wages and prices in the latter country and raise them in the former. Equality of costs and prices will thus be established and trade between them will stop. If, on the other hand, both the countries are on inconvertible paper currency standards, then consequent upon initial trade, there will be a movement in the exchange rate between the two currencies. The exchange rate will settle down at such a level that trade between the two is no more profitable to either of the countries.

Differences in money costs and money prices, therefore, offer no explanation for the inter-regional trade. They are themselves to be explained by this trade. Theory of comparative costs offers

the only satisfactory explanation. Of course, when things have settled down, differences in money costs serve as an index of differences in comparative costs.

### LIMITED SPECIALISATION IN INTER-REGIONAL TRADE

In discussing the theory of comparative cost, we adopted, as is usual, two-region-two-commodity analysis and made some other simplifying assumptions. Our conclusion was that a region produces and exports that thing in which it has a greater comparative advantage or a less comparative disadvantage, it imports that thing in which it has a greater comparative disadvantage or a less comparative advantage. In such a simplified model, when trade takes place, one commodity is exported and the other is imported. In the real world we come across certain phenomena which cannot be explained by this simplified analysis.

**1 Case of domestic goods** While trade is taking place between two regions, there are certain commodities which are neither exported nor imported.

This may be due to various reasons. Some commodities are geographically immobile, as, for example, houses. Trade in such commodities cannot take place. Also, may be, that one region has a comparative cost advantage in the production of a commodity but this advantage is not enough to cover the costs of transportation to the other region and thus it is not exported. Lastly, the foreign region may not be in a position to pay for more commodities, as the demand for imports from it in the home region is inelastic. And adjustments are not allowed to occur by artificial restrictions. As exports and imports must balance in the long run, only those goods are exported for which payment can be received in imports.

**2 Commodities produced as well as imported** Sometimes it happens that a region is producing as well as importing a commodity. This may happen when, in one of the regions, the commodity in question is produced under conditions of increasing costs. This can easily be shown with the help of diagram 31.1. Country A can produce the commodity at constant costs and  $MCA$  is its marginal cost curve. Country B can produce it at increasing costs and  $MCB$  is its marginal cost curve. Let us assume that there are no costs of transport and that the aggregate demand for the commodity is more than  $OP$ . Then, as country A can produce any amount at a cost of  $OR$  per unit, price of the commodity will be  $OR$ .

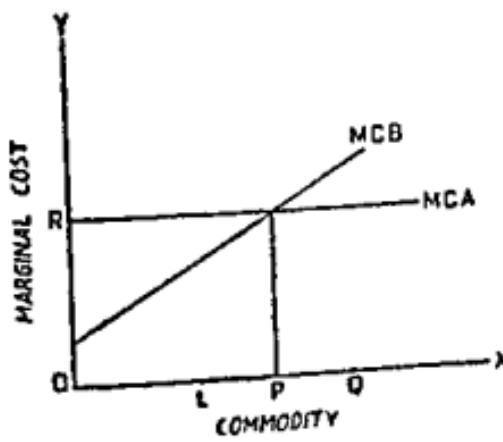


Fig 31.1

Country *B* will produce *OP* amount of the commodity. If her demand at price *OR* is more than *OP*, say *OQ*, she will import *PQ*. This is one case in which one country (*B*) will be producing as well importing the commodity. If, on the other hand, *B*'s demand is less than *OP*, say *OL*, she will export the balance *LP* to country *A*. Now, if *A*'s demand at price *OR* is more than *LP*, she will produce the balance herself. This is another case in which one country (*A*) will be importing as well as producing the commodity.

There is another explanation also of this phenomenon. Suppose for the production of the commodity some specific factor is required, which is available in a limited quantity in the region which has a comparative advantage in producing it. Let this region be country *A* and the other be country *B*. Suppose country *A* can produce *OP* which is not enough to meet the aggregate demand of both these regions.



Now, if *A*'s demand is more than *OP*, say *OQ*, she will be importing the balance *PQ*. If her demand is less than *OP*, say *OL*, and *LP* is not enough to meet *B*'s demand, then *B* will produce the balance of her demand over imports. In either case one of the countries will be producing as well as importing the commodity.

3. *Commodities imported as well as exported.* A region may be importing as well as exporting a commodity. One explanation offered for this phenomena is that the commodity imported may be different in quality from the commodity exported. India is an importer as well as an exporter of cotton but qualities of imports and exports are different. In fact goods of different quality are different commodities from the economic standpoint. Hence, when quality of imports differs from that of exports, we cannot say that the same commodity is being imported as well as exported.

Differences in costs of transport may make it possible for one part of a region to export a commodity and another part to import it. Bombay mills have, for a long time, been importing coal from South Africa, while Raniganj and Jharia were exporting coal to Burma and Malaya. Cost of sea transport being much less than the cost of land transport, this transaction proved doubly beneficial to the country.

The other important explanation of this phenomenon is entrepot trade. Even countries like Afghanistan and Nepal, which have no direct opening to the sea, have to trade with distant countries. Thus when Nepal imports goods from England, they pass through India. In customs registers they are entered as imports at Calcutta, while at Raxaul they are again entered as exports. Similarly when Nepal exports goods to some distant country, customs register

at Raxaul show them as imports, while at Calcutta they are shown as exports. Compiled figures, therefore, show the same commodities as exports as well as imports. In fact they are neither our exports nor our imports.

### EFFECT OF INTER REGIONAL TRADE—PRODUCTION

1. *The three cases considered*. As inter regional trade is inter-regional specialisation and every region specialises in the production of those things in which it has a comparative advantage, obviously larger production will result from it. It is, however, advisable to show it by an illustration that this trade does result in increased production. For that purpose we may take up the three cases already considered, assuming that there are two productive units in either country, in A as well as in B.

TABLE 31-d

Case I	Country A		Country B	
	5x or 15y		10x or 10y	
One productive unit produces				

Suppose there are two productive units in either country. Before specialisation, country A will produce  $5x + 15y$ , while country B will produce  $10x + 10y$ . Aggregate production will be  $15x + 25y$ . When country A specialises in the production of  $y$  and country B in the production of  $x$ , the former will produce  $30y$  and the latter  $20x$ . Thus the aggregate production will be  $20x + 30y$ , which is obviously greater than  $15x + 25y$ .

TABLE 31-e

Case II	Country A		Country B	
	15x or 20y		10x or 10y	
One productive unit produces				

Let us specialise country A will be producing  $15x + 20y$  and country B  $10x + 10y$ . Aggregate production will be  $25x + 30y$ . After country A has specialised in  $y$  and B in  $x$ , Country A will produce  $30y$  and country B  $20x$ . Aggregate production will now be  $20x + 30y$ , which means a reduction of  $5x$  and an increase of  $10y$ . Letting exchange rates being  $3x = y$  and  $x = 5y$ ,  $5x$  is of less value than  $10y$  by any ratio lying between these two. Hence the new aggregate production of  $20x + 30y$  is of greater value than the prespecialisation aggregate  $25x + 30y$ .

TABLE 31-f

Case III	Country A		Country B	
	20x or 20y		10x or 10y	
One productive unit produces				

of  $25x + 30y$ . Before specialisation, aggregate of production in the two countries will be  $30x + 30y$ . Now suppose country *A* specialises in the production of *y* and country *B* in that of *x*. Country *A* will produce  $40y$  and country *B* will produce  $20x$ . Aggregate production will be  $20x + 40y$  which exceeds by  $10y$  and falls short by  $10x$  from  $30x + 30y$ . As exchange ratio is  $x:y$ ,  $10x$  and  $10y$  are equal in value. Hence there is no gain from specialisation. Similarly if country *A* specialises in *x* and country *B* in *y*.

Thus inter-regional trade takes place when it is advantageous and results in increased production. When it yields no advantage, it does not take place. The gain from inter-regional trade is distributed between the participants according to the terms of trade which we shall discuss at the end of this chapter. But, whether the gain is equally or unequally divided between the participants, both regions do stand to gain.

2. *Idle specific factors.* A country may be obliged, by the comparative cost situation, to import a commodity the production of which requires a specific factor which it possesses. For instance, a country may possess coal mines and yet may be importing coal. Foreign trade will thus throw these mines idle. The country will not be getting any coal from its own coal mines, but will be paying for coal imported from outside. Does it not obviously involve a loss?

In finding an answer to the query, let us assume that the factor under consideration (coal mine) is absolutely specific, i.e., it cannot be used for any other purpose, whatsoever. We shall consider two interests separately, the interest of the owner of the mine and the interest of the country as a whole.

Mining of coal requires men and tools—labour and capital. Suppose a unit of labour and capital costs Rs. 100. This means that each unit of labour and capital would be earning Rs. 100 in all branches of the industry. For, if it could earn more elsewhere, it would quit mining, and if it were earning less elsewhere, more labour and capital would have shifted to mining.

Now, suppose that to mine one hundred maunds of coal, three units of labour and capital are needed. Cost of production of coal would be Rs. 3 per unit. The price, before foreign trade is allowed, will be anywhere above Rs. 3 per maund, depending on the extent of demand. If the price is Rs. 4 per maund, the owner of the mine will earn a surplus of Rs. 100 which is rent. As the factor is absolutely specific, its transfer earning is zero. In other words, if due to a decrease in demand, the price falls to Rs. 3 per maund, the mine would still be worked although the rent will have fallen to zero. If foreign trade starts now, the owner of the mine would not find himself in any worse position. Nor would the owners of labour and capital, who would shift their factors to other uses. Thus neither the owner of the specific factor, nor of the non-specific factors, will be losers on account of foreign trade.

Would the country as a whole lose? The answer is no. Three units of labour and capital were producing coal worth Rs 300. Now these units would be producing some other commodity. This other commodity must be valued as much otherwise how could their producers offer these units of labour and capital Rs 100 per unit?

If the price of coal were Rs 1 per maund when foreign coal begins to be imported the conclusion would be no different. Suppose, as a result of foreign imports, the price falls to Rs 3 per maund. Non specific factors would produce other goods worth three hundred rupees which will purchase the one hundred maunds of coal. The owner of the mine would lose rent but the consumer would get coal cheaper. What the left hand loses will be gained by the right hand.

The above analysis of course assumes that enough time is allowed to the non specific factors to shift to other uses. The process of shifting may involve some friction. During that period there will undoubtedly be some loss of earning to these factors.

**Conclusion** Our conclusion therefore, is that inter-regional trade increases aggregate production. The benefit to either region is twofold. The value of the imported goods is low as compared with their values when they were produced at home. Imports are thus obtained at cheaper rates at a less sacrifice. Also inter regional trade permits the productive resources of the country to be employed in the production of those commodities for which they are specially fitted. Thus by inter regional trade a greater amount of utility is obtained by a given effort. This increase in utility arises because quantities of all goods available increase, or because the new assortment available is preferred to the old assortment.

#### EFFECTS OF INTER-REGIONAL TRADE—DISTRIBUTION

**I Classical analysis** How does inter regional trade affect the various interests in the country? It was customary with the classical economists to think of the community as constituted of wage-earners, rentiers and capitalists. Also, foreign trade was conceived of as trade between agricultural countries, on the one hand, and manufacturing countries, on the other. Effect of foreign trade on functional distribution of national income, then, implied how wages, rents and profits change absolutely as well as relatively to one another.

That there is always an increase in aggregate production by the opening of inter regional trade, we have already shown. If this gain accrues to the community at large, all sections may gain. If, however, the gain is appropriated by one class, others may gain nothing, they may even suffer.

(a) **Rents** As in agricultural country exports produce of its land as well as raw materials to pay for manufactured goods, its margin of cultivation extends and rents rise. In modern language, land becomes more scarce in comparison to its demand and hence

rents rise. Export of raw materials will increase the incomes of owners of mines and forests also. In the industrial country, on the other hand, margin of cultivation moves up and land becomes less scarce with respect to the demand for it. Rents in that country, therefore, fall. And so do the incomes from ownership of mines and forests.

(b) In the agricultural country, exports of agricultural goods will make food dear. The labourers are injured by a rise in the food prices. They are, however, compensated to some extent by the cheapness of the imported goods. As, in general, food claims a large proportion of the income of the labourers, especially in agricultural countries which are, as a rule, poor countries, the labourers may on the whole be sufferers as a result of foreign trade. But they will share better employment of resources. Also, if property is widely distributed, most of the workers will also be landowners. What they lose in wages, may be more than made up in rents. In the manufacturing country, on the other hand, foodstuffs become cheaper and thus real wages rise. Labourers also share the better employment of resources.

(c) *Profits.* Foreign trade implies specialisation in both the countries, more production and hence more purchasing power. Markets thus get extended. Specialisation reduces costs and extended markets bring higher prices. Hence profits increase in the agricultural as well as the industrial country.

Foreign trade "weakens the restraints of status." It breaks down the force of custom. It encourages the extension of competition.

*Defects of this analysis.* Classical method of studying the effects of foreign trade on the internal distribution of wealth is defective. It does not give any place to people with fixed incomes and fixed obligations, that is, the salaried people and the debtors. The more important defect of this method is the assumption that the imports of some countries are wholly primary goods and exports are wholly manufactured goods. For instance, in the case of India, 57 per cent of exports are manufactured and 43 per cent are primary goods. Similarly 40 per cent of her imports are manufactures and the rest are primary goods. Obviously, an analysis of her exports and imports does not help us to conclude whether she is an agricultural or an industrial country.

(2) *Haberler's analysis.* An alternative method of studying the effects of foreign trade on internal distribution of income has been given by Haberler. He analyses the effect of foreign trade on the relative prices of various specific and non-specific factors of production.

(a) *Specific factors.* Take the specific factors first. Such of them as are required for export industries will, as a result of foreign trade, find their demand having gone up and their relative scarcity having increased. Their prices will, therefore, rise. Similarly, the demand for specific factors, required for producing those things which

begin to be imported, will decrease and, hence, their prices will fall. Obviously, the owners of factors, specific to the import industries will experience a fall in their incomes.

(b) *Non specific factors* Non specific factors are, by definition those factors which can move from one industry to another. Non specific factors which were employed to produce goods, which are now being imported, will now shift to those industries which are producing exports. According to the principle of comparative costs, these factors will prove more productive in their new employments and hence their prices will rise. But the rise in the incomes of owners of non-specific factors will, obviously, not be as much as those of the owners of factors specific to the production of export goods.

#### EFFECTS OF INTER REGIONAL TRADE—EMPLOYMENT

*Peculiarities of labour* Development of industries by restricting imports is often advocated for increasing employment. It is, therefore, of special interest to discuss the effects of foreign trade on employment. It may be noted to start with that labour differs from other factors of production in two respects. First, even a small fall in wages may lead to strikes and unemployment. Secondly, a material means of production, say a machine, if it has become obsolete, may be left idle to wear out. But a labourer must try to maintain himself, even if he is too old to learn a new job.

*Is labour a specific factor?* Individual unskilled workers are very mobile from one industry to another, provided movement does not involve long distances. Individual skilled workers, whose jobs require long training or long courses of education, are more or less specific. It is rather difficult for a physician or an engineer to change his profession. Considering labour as a class, this factor is non specific in the long run. If the demand for teachers is falling and that for lawyers is increasing, more graduates will join law colleges and less training colleges. Existence of trade unions tends to make labour less mobile in the short run. So does the loss of time involved in finding a new job. We may conclude that from the long period point of view, labour is a non specific factor, but in the short period, many individuals and groups of labourers find it difficult to shift from one occupation to another.

*Long run effects* Before foreign trade begins, a region produces both 'exports' as well as 'imports'. After trade starts, it will produce only 'exports'. It will produce these for the home market as well as the foreign market, and, hence, the demand for labour in export industries will increase. Those, who are thrown out of jobs in the import industries, will be absorbed in export industries. As the aggregate production increases, labourers may be offered more jobs or higher wages. Thus in the long run, foreign trade cannot affect labourers adversely. In due course of time labour force will adjust itself to changed circumstances. Labourers, as owners of a non-specific factor, will enjoy an increase in their incomes.

*Short-run effect.* In the short run, however, foreign trade may adversely affect those who are employed in the import industries. Some of them will not like to change over even if they get lower wages in their "old" jobs. Others cannot shift to a new industry unless they are prepared to undergo a long training or accept a wage much lower than their previous training had entitled them to. Even those, who are more or less unskilled and may feel at home at their new jobs, may have to wait for some time before they get themselves fixed up.

#### TERMS OF TRADE—MEASUREMENT

*Meaning.* If trade between two regions involves two commodities only, one on either side, we can speak of an exchange ratio or an exchange rate between the two. When, however, more than two commodities are involved, we speak of the terms of trade. Terms of trade are the rate at which imports are purchased for exports. When for given imports more goods have to be exported, or for given exports less goods can be imported, terms of trade are said to have become unfavourable and *vice versa*.

Two points deserve notice. First, when in trade between two regions, say, country *A* and country *B*, terms of trade become favourable for country *A*, it obviously implies that for country *B*, terms of trade have become unfavourable and *vice versa*. Second, terms of trade as such cannot be measured. For, a list of various amounts of a number of commodities exported and a corresponding list of the amounts of commodities imported can convey little sense. All that can be done is to measure changes in the terms of trade. That is, it is possible to make only a comparative study of terms of trade.

*Measurement of changes in terms of trade.* For measuring changes in the terms of trade, aid is taken of index numbers of prices. A year is selected as a base year and the weighted averages of prices of exports as well as of imports during that year are represented by 100 each. Corresponding figures for prices of exports as well as of imports during the year (or years) in question are computed. Index number of exports divided by the index number of imports for the year in question indicates how terms of trade have moved in comparison with the base year. Consider, for instance, the following table :—

TABLE 31-g

Year	Index for export prices	Index for import prices	Index for terms of trade
1939	100	100	100
1940	110	100	$\frac{110}{100} \times 100 = 110$
1941	120	150	$\frac{120}{150} \times 100 = 80$

In 1940, as compared with 1939, which is treated as the base year, prices of exports rose by ten *per cent* while the prices of imports stood at the same level. Terms of trade thus moved in favour of the region by ten *per cent*. In 1941, as compared with the base year, while export prices rose by twenty *per cent*, import prices rose much more, i.e., by fifty *per cent*. Terms of trade, therefore, moved against the region by twenty *per cent* as shown above.

Division of gain resulting from trade between two regions depends on the terms of trade. Better terms of trade, other things being equal, imply more gain from trade to the region in whose favour the terms have moved.

*Interpretation of changes in terms of trade.* Changes in the terms of trade have, however, to be interpreted with caution. Measurement of changes in terms of trade involves use of index numbers. And index numbers are open to all those objections which can be levelled against all averages. Moreover, to interpret correctly changes in the terms of trade, it is always advisable to peep behind the scene and find out what has brought about the change. Suppose terms of trade have moved against a region. It may be that it has begun to offset its exports cheaper because of improvements in the methods of production at home. In such a case unfavourable terms of trade do not involve a loss. On the other hand, if terms of trade have become unfavourable on account of an increase in costs abroad, higher prices paid for imports represent a real loss.

Thus, while gain to a region from its foreign trade does depend on terms of trade, movements in the terms of trade are not a sure index of this gain. Yet, if goods are being produced at constant costs at home and abroad, terms of trade unmistakably indicate the division of gain between the trading regions. The nearer the terms of trade to the pre-trade ratio at home, the less is the share of the region in the benefit from trade and vice versa.

#### TERMS OF TRADE—DETERMINATION

*The limits.* In studying the factors which determine terms of trade between two regions, it is convenient to follow the analysis given by J. S. Mill. Here we have once again to assume all those conditions which we did in studying the theory of comparative costs—two countries, two commodities, barter system of exchange, constant costs of production, etc., etc. Suppose, now, that cost position in the two countries is as follows :—

TABLE 31-A

	Country A	Country B
One productive unit produces	10x or 15y	10x or 10y
Exchange ratio before trade	1x 15y	x 1

Country  $A$  will produce  $y$  and country  $B$  will produce  $x$ . If terms of trade are such that country  $B$  gets less than one  $y$  for one unit of  $x$ , trade with country  $A$  will be disadvantageous for her. If terms of trade are  $x:y$ , she will neither gain nor lose from such trade. Thus terms of trade cannot be such that one unit of  $x$  exchange for less than one unit of  $y$ . Similarly, by giving more than  $1\cdot5$  units of  $y$  for one unit of  $x$ , country  $A$  will be a loser. Thus terms of trade cannot be such that a unit of  $x$  exchanges for more than  $1\cdot5$  units of  $y$ . Hence the terms of trade between the two countries, if there is to be any trade, must be between  $x:y$  and  $x:1.5y$ .

*Reciprocal demands.* Where exactly, between these two limits, will the terms of trade stand? The answer is that it depends on reciprocal demands. The terms of trade must be such as bring about an equation in the reciprocal demands. This requires further explanation.

Suppose the terms of trade are  $x:1.2y$  and, at this rate, country  $A$  demands 1000 units of ' $x$ '. It obviously implies that, at these terms of trade, country  $A$  is prepared to supply 1200 units of  $y$ . Thus, when we speak of  $A$ 's demand at given terms of trade, the amount  $x$  is prepared to offer for sale is implicit in the statement. Similarly, when we know  $B$ 's demand for  $y$  at given terms of trade, we also know implicitly how much of  $x$  she is prepared to supply at this rate. We need, therefore, to know only each country's demand for the other's product at any terms of trade, i.e., reciprocal demand. Terms of trade will bring about an equilibrium between these reciprocal demands.

*Equation of reciprocal demands.* A country's demand for the other's product is subject to the law of demand. The more favourable the terms of trade to a country, the more will be her imports and vice versa. Keeping this fact in mind, let us draw the respective demand and supply schedules of the two countries.

TABLE 31-i

Terms of Trade	Country A			Country B	
	Amount of $x$ demanded	Corresponding amount of $y$ offered		Amount of $y$ demanded	Corresponding amount of $x$ offered
1	2	3		4	5
$x:y$	1550	1550		...	800
$x:1\cdot1.y$	1300	1430		990	900
$x:1\cdot2y$	1000	1200		1200	1000
$x:1\cdot3y$	800	1040		1430	1100
$x:1\cdot4y$	700	980		1680	1200
$x:1\cdot5y$	640	...		1950	1399

As we move down the columns in the above table  $x$  becomes dearer and  $y$  becomes cheaper. Hence at each successive term of trade, amount of  $x$  demanded by country  $A$  (column 2) will contract and the amount of  $y$  demanded by country  $B$  (column 4) will extend. Given the terms of trade and  $A$ 's demand for  $x$ , her supply of  $y$  can be calculated. Entries in column 3 can be calculated from columns 1 and 2. Similarly entries in column 5 can be calculated before columns 1 and 4.

With the schedules in the above table as given data, equilibrium will, obviously, be established at the terms of trade  $x : 2y$ . It is at this rate that "equation of reciprocal demands" is established.

*Elasticities and intensities of demand* If we scan the above table carefully, we shall find that relative bargaining strength of either country, on which the terms of trade depend, is itself dependent on the nature of their respective demands. Suppose country  $A$ 's demand for  $x$  is inelastic. Then she will purchase a given quantity of  $x$  whether the terms of trade become more favourable or less favourable. In other words, she is in a weaker bargaining position.<sup>1</sup> Conversely, the higher the elasticity of demand for her imports, the stronger is her bargaining position.

Bargaining strength also depends on the intensity of demand. If country  $A$ 's demand increases (so that amount demanded at any given rate is higher than before) she will become a weaker bargainer and terms of trade will move against her. Evidently, then, a big country is in a weaker bargaining position as against a small country.

*Conclusions*

1. Terms of trade always lie between the limits determined by the comparative costs of commodities in the two regions.

2. Terms of trade depend on relative intensities and elasticities of the respective demands of the two regions. The less intensive or the more elastic the demand for imports of a region, the more favourable will be the terms of trade to it and *vice versa*.

3. Equilibrium is established at the terms of trade which brings about an equation in the reciprocal demands.

## CHAPTER XXX

# PROBLEMS OF INTERNATIONAL TRADE

## BALANCE OF PAYMENT

*Balance of trade.* People, interested in the commerce of their country with the outside world, generally like to know what commodities are imported from the foreign countries and what products of the country are exported abroad. They desire to know the quantities as well as values of exports and imports. If a statement is prepared giving, on the one hand, a list of quantities and values of the various goods exported, and a list of quantities and values of the goods imported, on the other, we get what is called the balance of trade. If we use the term "costs of transport" to cover carriage, insurance and banking charges, as well as export duties, if any, we can say that, while values of imports include the costs of transport to our ports, the values of exports do not include the costs of transport to the foreign ports. This is what is meant by saying that in a balance of trade exports are accounted for F.O.B. (free on board), while imports are entered c.i.f. (costs, insurance, freight). There are thus two columns in a balance of trade, one showing exports F.O.B., and the other showing imports c.i.f.

Obviously, a balance of trade must relate to a period of time. This period is generally a year, though statements may also be prepared on a quarterly or a monthly basis. If the aggregate value of exports equals the aggregate value of imports during a year, the balance of the trade is said to be even. If, however, the value of exports exceeds the value of imports; the balance of trade is said to be active, positive or favourable. And if the aggregate value of imports exceeds that of exports, it is said to be passive, negative, or unfavourable. The use of the terms favourable and unfavourable balance of trade has sometimes led to the confusion whether the term "balance of trade" refers to the whole statement containing the two columns of exports values and imports values or to the excess of the one over the other. Probably it would be advisable to use the term balance of trade to mean the whole detailed statement and to use the phrases favourable or unfavourable balance of trade to denote the difference between the aggregates of values in the two columns.

*Balance on income account.* A country does not export and import goods only. Services of various kinds like transportation, banking and insurance also constitute items in international exchange. Then, there are items like interest and profits on foreign investments. As these items are not recorded in the customs registers kept at the port towns, they have come to be known as "invisible" items of

trade. If, in addition to "visible" items of exports and import, "invisible" items of trade are also included the statement thus obtained is the balance on current account or income account.

*Balance of payments.* Neither the balance of trade nor the balance on income account tells the complete story. Payments become due from one country to the other, not only on account of the so-called "visible" and "invisible" items of trade but also on account of capital movements, i.e., borrowing and lending. If we include, on the one hand, all those items because of which payments become due from the foreigners to the residents, and, on the other those because of which payments become due from the latter to the former, we get a statement which is called the balance of payments. It may be noted that by the term "residents" is not meant citizens. Citizens of a country may go and stay abroad. Whatever then, they purchase from the residents of their "home country" occasions a payment to those residents. Thus, whatever they purc<sup>e</sup>hase constitute import items for the country where they are now residing.

An item, on account of which payment becomes due from foreigners to residents, is a credit item. Similarly an item which occasions payment to foreigners from residents is a debit item. For the sake of convenience, the various items involved may be classified into merchandise, invisible items of trade, tourists' expenditure, capital transactions and unilateral transfers. A word may be said about each one of these.

**1 Merchandise.** Export of merchandise is a credit item while their import is a debit item. The question whether gold be included under this head or not, has often been debated. It is said that so those countries which possess extensive gold mines, yellow metal is as much an item of trade as any other. For others, export of gold is a balancing factor. But gold may be exported just to earn profits from higher prices abroad. Similarly, gold may be imported for industrial purposes rather than to balance credit with debit item. As it is often not possible in practice to distinguish between exports and imports of gold for various purposes, the difficulty is insurmountable. This explains variations in practices in different parts of the globe.

**2 Invisible items.** Under the head of invisible items of trade are included carriage of goods by ships or otherwise, banking services like remitting relevant papers, advancement and collection of money, etc., insurance, services of agents of foreign concerns, of attorneys, etc. Such services rendered by residents to foreigners constitute credit items and those rendered by foreigners are debit items. Firms working in a foreign country remit profits to their shareholders. Similarly workers and salaried employees from foreign countries may remit part of their earnings to their families. Such transfers of money may be considered as payments for services rendered. It must be evident that amounts relating to invisible items are difficult to ascertain as there cannot be recorded at the customs ports.

3. *Tourists' expenditure.* Tourists' expenditure in foreign countries are the sums spent on foreign goods and services. The only difference in this case is that instead of goods and services moving to the consumers, it is the foreign consumers who move to goods and services. Sums of money remitted to students abroad may also be included in this item.

4. *Capital transactions.* Consider capital movements. If India extends a loan to Nepal, *immediately*; a payment becomes due from India to the latter. An item, which necessitates a payment from residents to foreigners, is a debit item. Thus, while, export of merchandise is a credit item, export of capital is a debit item. It has been suggested that exports of capital ought to be viewed as imports of foreign securities to facilitate comprehension. Repayment of the loan by Nepal will constitute a credit item for India, and a debit item for Nepal. Interest payments cannot be included in capital movements because there is no repayment in lieu of payment of interest. These have to be included in income account, along with profits and wages, in visible items. For, interest remitted abroad is nothing but a price paid for the services of foreign capital.

5. *Unilateral transfers.* Lastly, there are unilateral transfers. Such items give rise to movement of goods and services in one direction only. Instances of unilateral transfers are to be found in gifts, charities, war reparations and indemnities.

#### FAVOURABLE AND UNFAVOURABLE BALANCE OF PAYMENTS

*Difficulties in discerning favourableness or unfavourableness.* While defining the term balance of trade, we also pointed out what is meant by favourable and unfavourable balance of trade. Can we apply the same epithets to balance of payments as well? The answer is: yes, but the meaning of the terms, favourable and unfavourable balance of payments, are not so obvious as in the case of balance of trade.

In fact, as ledger keeping method is to be applied in preparing the balance-sheet, called the balance of payments, the credit and the debit items in such an account must balance. To show this let us start with a position where, in the balance of payments of a country, during a year, debit items exceed credit items. There are three ways in which the country in question may meet the deficit. It may export gold. But export of gold is a credit item, which, when inserted in the account, will equalise the two columns of the balance of payments. A second method is to reduce balances abroad which the country might have accumulated in the past. This implies a repayment of loan to the country which again is a credit item. Thirdly, the country might borrow to the extent of the deficit. And import of capital is also a credit item. Even if the country concerned does not take any one of these steps, the position is no different because what it does not pay, it owes. What it owes is a short-term foreign loan which must be included on the credit side. Thus we find that if the balance of payments is properly and correctly prepared, the totals

of credit items and of debit items must invariably be equal. This is what is meant by saying that a balance of payments is always a balanced statement of the annual accounts of foreign credits and debits of a country.

Favourableness or unfavourableness of the balance of payments cannot, thus, be known just by casting a glance at the statement of accounts. One has to dig deeper to find out if the country had exported or imported gold, or whether it had increased or reduced its debt obligations to foreign countries. If it had to export gold or reduce balances abroad or raise loans from outside to balance the credit column with the debit column the balance of payments has been unfavourable. In the opposite circumstances it is favourable. It must be noted, however, that in actual practice it is difficult to say whether gold has been exported to benefit from a price-difference or to balance the balance of payments. On the other hand it is not easy to say whether gold has been imported for industrial purposes or to bring imports values to the level of export value. Similarly about funds imported or exported. In practice, therefore, there are very real difficulties in finding out whether the balance of payments is active or passive.

*Balance of payments and prosperity.* An active balance of payments is no index of prosperity, nor is a passive balance always to be unwelcome. Many poor countries have an active balance of payments. Similarly, balance of payments may have become passive because the country is importing capital goods for her development. Moreover, imports are the payments which a country gets for her exports. If a country's balance of payments has been active over some years, it is but proper that it is passive for other years. A government, which adopts policies to earn every year an active balance of payments, denies her people the enjoyment of some goods and services which could be given them without any adverse effect on economy.

### IMBALANCE IN THE BALANCE OF PAYMENTS

*Disadvantages of a continuously active balance of payments.* A continuously active balance of payments is generally not considered a cause for any alarm. There has been only a single instance of Sweden where favourableness of the balance of payments was considered against the interest of the economy. It was argued that active balance leads to import of gold, which implies locking up country's resources in a barren investment, an investment which does not yield any income. Moreover, an active balance may produce inflation at home. If gold is imported and the country is on the gold standard, it causes a rise in prices. If balances are built abroad, currency has to be issued at home to make payments to those who have exported. If the active balance is a continuous feature, inflation might very well get out of hands. In the light of these views, it is contended that a continuously active balance of payments needs to be corrected. The methods suitable for the purpose are just the opposite of the methods by which a continuously passive balance of payments can be corrected.

As the latter is a more alarming phenomenon, it is preferable to study these methods with reference to a passive balance of payments.

*Disadvantages of a continuously passive balance of payments.* Adversity in the balances of payments can be met by reducing balances abroad or by borrowing from outside. Now, obviously, neither has any country unlimited balances nor unlimited credit in the foreign countries. The third method is of exporting gold. But stocks of gold in any country are not unlimited, either. Thus continued adversity in the balance of payments has to be corrected. It has to be corrected much before the stock of gold in the country has been exhausted or has become very slender. Gold is, after all, a medium of international payments. Also, in some countries, at any rate, it is a source of confidence in the home currency. Hence some stocks of gold must be conserved.

*Methods of correcting an adverse balance of payments.* Thus if a country is faced with an adverse balance year after year, some steps become essential to correct it. Methods for correcting an adverse balance of payments may be classified into monetary and non-monetary methods. In monetary methods we include reduction in the external value of the home currency and raising the internal value of it. Non-monetary methods refer to various devices which restrict imports and those which encourage exports. Restriction of imports, however, plays a more prominent role.

### I. MONETARY METHODS OF CORRECTING THE ADVERSE BALANCE OF PAYMENTS

*Effect of fall in the exchange value of money.* Before we discuss the monetary methods of correcting an adverse balance of payments, it is advisable to clarify one point. Suppose the exchange rate of our home currency falls. This means that our currency has become cheaper for the foreigners. Assuming our prices to remain the same, our goods become cheaper for them. This encourages our exports. Also, a fall in the exchange rate of our currency implies that foreign currencies have become dearer. Given the prices of foreign goods in their respective countries, they become dearer for the residents of our country. Our imports, therefore, shrink. Increase in exports and shrinkage in imports are thus, the immediate effects of a fall in the exchange rate of our currency.

Will that mean more foreign earnings and less foreign debits? It all depends upon the elasticities of demand for exports and imports. If the elasticity of demand for exports is unity, quantum of exports will increase but export earnings will remain the same. If this elasticity is less than unity, exports will increase but total export earnings will be actually less than before. Total export earnings will increase only if the elasticity of demand for them is more than unity. Similarly, total debits for our imports will decrease only if the elasticity of our demand for them is more than unity. Hence total export earnings will rise and total payments for imports will fall only when the demand for our exports and imports is elastic.

Consequent upon a fall in the exchange rate, exports become cheaper for foreigners and imports become dearer for residents. This is, however, what happens immediately. Ultimately, changes in demand for exports and imports bring about changes in domestic as well as foreign price levels.<sup>1</sup> After some time, prices at home rise and prices abroad fall. Initial advantage will then have been lost. The only trace left will be the new business contacts developed with purchasers of exports. As a result of these contracts some of the gains in increased exports may stick on.

Conclusions are: First, that immediate increase in export earnings and fall in import obligations depend upon elasticities of demand for exports and imports respectively; second, immediate gains are bound to disappear and ultimate gain depends on how far good business contacts have been created in foreign markets in the meanwhile.

Let us now consider the monetary methods —

1 *Reduction in the exchange rates* Suppose there are free exchanges, that is, the exchange value of home currency is left free to be determined by the forces operating in the market. In case the balance of payments is adverse, the demand for home currency is less than its supply. At the counters of the exchange banks come more people with home currency to purchase foreign exchange than the people offering foreign exchange and demanding home currency. Banks therefore, begin to quote the home currency low. In other words, exchange value of home currency in terms of foreign currencies falls. This is called depreciation. Depreciation may be defined as a fall in the value of currency brought about by the working of the forces of supply and demand in the market. As we have discussed above, depreciations will bring about an increase in exports and a reduction in imports.

Now, suppose the government or the Central Bank or any other authority has taken upon itself the obligation of keeping exchange rate fixed. Here the prototype of depreciation is devaluation. The latter means a deliberate reduction in the exchange rate by the monetary authority. In case the country is on the gold standard and so are other countries, devaluation can be effected by clipping the home currency so that its gold contents are reduced. The effect of devaluation on the balance of payments is the same as that of depreciation, since both are reductions in the exchange rate. Exports are encouraged and imports discouraged and the gap between the credit and debit columns in the balance of payments may be bridged.

2 *Deflation* Just as a fall in the external value of home currency tends to correct an adverse balance of payments, so does a rise in the internal value of currency. Internal value of currency is raised by bringing down the general level of prices by contracting exchange media in circulation. We have already studied the methods of credit control by the Central Bank. One or more of those methods

<sup>1</sup> Explanation for this will be given in the next chapter.

may be employed to deflate currency. As the prices fall at home, foreigners purchase more of our goods and residents of the country also shift their purchases to home products. Exports thus increase and imports fall, both adjusting themselves to each other.

## II. NON-MONETARY METHODS OF CORRECTING THE ADVANCE BALANCE OF PAYMENTS

The purpose is to encourage exports and discourage imports. Encouragement of exports may take the form of bounties or subsidies or other facilities like lower transport charges or exemption from excise, etc. Restrictions on imports may also take several forms and may be imposed for purposes other than correction of the balance of payments. All these methods deserve a detailed treatment.

### 1. IMPORT PROHIBITIONS

*Reasons for import prohibition.* Import of certain goods which are considered non-essential or less important may be prohibited as a step towards correcting the balance of payments. Import prohibition may also be imposed for other reasons. Imports of arms on private account may be prohibited for reasons of security, of certain drugs for their harmful effects, and of obscene literature on grounds of morality. Import prohibitions have sometimes been imposed on foreign products to encourage or maintain their production at home. If imports of certain manufactures are prohibited, exports of their raw materials may also be prohibited to bring down their prices at home.

### 2. CUSTOMS DUTIES

*Export duties.* Export duties may be imposed with a view to lowering prices at home. Usually, however, the purpose of their imposition is to bring revenue to the government. Hence such duties are comparatively lower, and also fewer.

*Import duties.* Import duties are much more important. If they are imposed just to provide the State with some revenue, these are called revenue duties. But, if the purpose is to afford protection to home industries, they are called protective duties. As even revenue duties afford some protection to domestic industries and, on the other hand, even protective duties (unless they prove prohibitive) earn some revenue for the government, the distinction is not very clear-cut.

Customs duties may be levied as *per unit* of the commodity or *per price per unit* of the commodity. Duties which are fixed as a given sum *per unit*, are called specific duties. The unit may be defined in terms of weight, area, volume, or some other specific description. Duties, which are levied as a fixed percentage of the price of the commodity, are called *ad valorem* duties.

When an important duty is levied, buyers pay a higher price while sellers receive a lower price, difference in the duty going to the

government. Thus demand at home, as well as supply from abroad, contracts. It is, therefore, held that import duties are a very effective method of correcting the balance of payments. In most cases they, of course, prove an effective weapon. But it is not certain that they would always prove effective. As duties are levied, people may spend less on foreign imports. But the part of income thus released may be spent on goods which were being exported. In such case, exports also fall. Or, the sums mentioned above may be spent on those imports which are untaxed or less taxed. Total imports may, thus, not diminish.

### 3 QUOTA SYSTEM

*Meaning* Quota system refers to quantitative restriction of imports. It may be that a certain fixed quantity is allowed to be imported duty free or upon payment of a low rate of duty, additional imports being permitted in unlimited amounts upon payment of a higher rate of duty. This is known as *tariff quota*. When there is exchange control, and the exchange authority releases only a limited amount of exchange for the import of a commodity, it is called an *exchange quota*. The system of exchange quota has been very common in recent years as a large number of countries have adopted exchange control. Problems of exchange quota are the problems of exchange control which we shall discuss presently. An important form of quota system is the method of *import quotas*, in which a fixed quantity, and no more, is allowed to be imported. This system was first adopted by France in 1931. By 1934 she had fixed quotas for more than seven thousand items.

*Allotment of quotas* When an import quota is fixed on a global basis, i.e., without reference to the countries of origin, there is a discrimination in favour of neighbouring countries, since their goods can arrive earlier than the goods of distant countries. In global quotas, supplies are not evenly spread over the whole period, large quantities are rushed into the country at the beginning of the quota period. When the quota has been imported, the remaining goods which have already arrived at the ports or are on their way, rot for some time at the ports and then travel back. This is a source of loss as well as embarrassment to dealers. It is, therefore, proper that quotas are allotted. But how?

If the quotas are distributed among the importers on the basis of their imports, it freezes *status quo*. It makes it impossible for the new entrants, however adventurous and promising, to share the trade. It was to avoid this that authorities in India have been earmarking a part of the quota for new-comers and the rest for established importers. The fact, however, remains that the established importers get the lion's share.

Quotas may be allotted to dealers in exporting countries. In that case profits, which arise from a higher price in the importing country, are apt to be pocketed by the traders of the exporting countries.

The most important effect of fixing a quota is to divorce home price from foreign price. As the quantity imported is not allowed to adjust itself to the price prevailing in the home country, this price comes to stand higher than the price in the exporting country (or countries). The profit-margin is thus large and is enjoyed by those to whom quotas are allotted. Fixing of quota is, therefore, a kind of discrimination either in favour of neighbouring countries or in favour of allottees of quotas. This discrimination can be avoided if import licences are openly auctioned by the government and are made transferable. This method has not, however, yet been employed by any government.

*Merits of quota system.* Certain merits have been claimed for the system of import quotas. If a country decides to import a smaller quantity of a commodity, it can achieve this objective by suitably raising the import duty. But exactly how much increase in import duty will suit the purpose, is difficult to determine in practice. Method of import quota, on the other hand, is a very certain instrument for the purpose. Moreover, changes in import duties involve elaborate legislative procedure. In some cases the requisite increases in import duties may be extremely high. Or, import duties may be bound by treaties and it may not be possible to raise them. For all these reasons fixation of quotas is easier and preferable. Also, import quotas are not subject to general clauses of agreement with foreign countries. Import quotas are a better method than import duties, of checking unemployment. They are the surest instrument for ensuring that prices of imported commodities would not fall in times of depression.

*Demerits of quota system.* Import quotas are, however, very injurious to international trade. They are ranked among the most restrictionist devices. They violently interfere with the free functioning of price mechanism. Another demerit is that, though quota system like import duties, reduces imports, yet while import duties bring a revenue to the government, quotas do not. Moreover, as we have noticed above, they lead to concentration of imports in the earlier part of the quota period. Global quotas discriminate against countries. If quotas are allotted to importers, long-established firms enjoy windfall profits while new entrants suffer hardship. If quotas are allotted by countries, profits go to foreigners and it becomes difficult to ensure that exporters would send good qualities of goods. In fact, rigid quotas are much more injurious than tariffs as they violate competitive market process and are not consistent with equality of treatment. Method of free auctioning, mentioned above, may reduce its evil effects, if there are no secret quotas and the date and avenue of auctions are given full publicity.

#### 4. EXCHANGE CONTROL

What is exchange control? The term 'exchange control' may be stretched to mean any intervention on the part of authorities in the working of the foreign exchange market. For instance, the govern-

ment of a country may prohibit the sale of foreign exchange except or trading requirements or for reasonable travelling expenses, the purpose being to check the outflow of capital investments. But no official control apparatus may be established. Only the banks of the country may be asked to see that the order is not violated.

Exchange control has, however, come to imply a complete suspension of open market in foreign exchange. A Central Authority is constituted. All transactions in foreign exchange are subject to the assent of this authority. In most cases, the Exchange Authority becomes the sole dealer in foreign exchange. It maintains a Central Pool of foreign exchange. All those, who earn foreign exchange, surrender it to the Central Pool. A system of licences for exports and imports is an essential feature of exchange control. Export licences are issued on the condition that the foreign exchange would not be invested abroad but will be handed over to the Exchange Authority. Exporters of services and recipients of interest and amortisation payments also have to surrender foreign currency. Foreign credits, securities and titles to property held by the nationals are mobilised and the proceeds added to the Central Pool. The demand for foreign exchange is reduced to the minimum. A system of priorities is introduced. Repayments of debts due to the foreigners are suspended. Nationals going abroad are allowed small sums for expenditure. A distinction is made between "necessary" and "superfluous" imports, and import licences are issued only in respect of the former. Efforts are made to increase the supply of foreign exchange by encouraging exports by various methods. Of these, one particular method is that foreigners are allowed to withdraw their deposits from the country only at below the contractual rate. The saving thus made is given as subsidy to exporters. Exchange control is considered to be the most restrictive of all devices as it altogether severs connection between the domestic price level and the foreign price level.

*Why exchange control is adopted.* There are three circumstances under which exchange control may be adopted. The first, and the most important, is the circumstance when a country is experiencing 'flight of capital'. Nationals are investing abroad, and foreigners are withdrawing their investments, not because interest rates are lower at home but because they fear a deterioration in the domestic economy. In such a case tariffs and quantitative trade restrictions are of no avail as they cannot remove the fear complex. Methods of credit control operate slowly. They may further disturb confidence and also lower prices and increase unemployment. Devaluation cannot be resorted to as it may further lower confidence in the stability of the currency. Thus when exports of capital are motivated by fear, the only effective way open to authorities is exchange control.

The second circumstance arises when a country is faced with a chronically adverse balance of payments in a period of acute depression. Prices are falling sharply, foreign currencies are depreciating, and foreign credit is not available. A disequilibrium

in the balance of payments in these circumstances threatens to exhaust reserves of gold and foreign exchange which are, after all, meant to meet only temporary deficits. Deflation in such a case would increase unemployment which is already large. Devaluation, if adopted, has to be a continuous process because foreign currencies are constantly depreciating. Raising of tariff rates or fixture of quotas are considered too slow or too cumbersome. The country has to take resort to exchange control.

The third circumstance is war. Exports shrink while imports for military requirements have to be stepped up. And there is shortage of shipping space. Moreover, the country concerned cannot allow national currency to fall into the hands of the enemy. The government may introduce exchange control, using the limited foreign exchange in the manner in which it deems proper.

*Once adopted exchange control becomes comprehensive.* Exchange control in recent times was first of all adopted by Germany in 1931 to stop the flight of capital. It was soon realised that once exchange control is instituted, it must be made comprehensive. Of course, the purpose was to stop exports of capital, but that purpose could not be properly served unless all precautions were taken against evasion. Exchange control is thus accompanied by trade control. Moreover, the bureaucrat enjoys the exercise of his power. Once he is given some powers, he endeavours to extend them and succeeds in introducing trade control on the plea of precautionary measures. An important reason for the extension of exchange control exists in the fact that exchange control severs the link between domestic prices and foreign prices. The government can adopt independent fiscal and monetary policies. It is in a position to raise internal prices and yet keep the currency externally over-valued. Independence of fiscal policies and retention of over-valued rates of currency become as much the aim of exchange control as stoppage of capital exports. In fact, since 1945, they have been the main objectives in many countries.

*Spread of exchange control.* Moreover, exchange control is infectious. Once adopted by some countries, it tends to spread. Exchange control countries desire it to spread because they wish to make the maximum use of bargaining power which exchange control gives them. Moreover, an exchange control country has a high value of currency, and it is easier to trade at high rate when other currencies are rising, or at least are not falling, in value. Another reason is that trade among the exchange control countries increases and they divert their trade from free exchange countries to exchange control countries. Free exchange countries find their important markets shrinking and thus prefer to join the ring.

*Methods of encouraging exports.* The government of an exchange control country finds itself in a position to adopt independent monetary and fiscal policies. Generally, it follows an expansionist policy to reduce unemployment. Internal price level thus rises. Exports become

unacceptable to foreigners. Correspondingly, imports have also progressively to be reduced unless the government takes some steps to encourage exports. Many such steps are possible. It may enforce one rate of exchange for imports and a lower rate of exchange for exports. And it may adopt a higher rate of exchange for those exports foreign demand for which is inelastic and lower rates of exchange for those which are not acceptable to foreigners at higher prices. This is the method of multiple exchange rates. The second method is of allowing 'private compensation'. This is another name for barter deals which are allowed in those cases where the exports involved are such as could otherwise not be sold abroad. Another method is "exchange clearing". Country A concludes an agreement with another exchange control country B, according to which the former opens a clearing account in the Central Bank of the latter. Importers in country B make all payments for their goods by depositing the amounts due in their national currency to this clearing account. Exporters of country B receive payments for their exports to country A from this account as their claims mature. If the amount in the clearing account proves insufficient to meet the claims of the exporters of country B, they have to wait till importers deposit more, every exporter getting his payment by turn as deposits pour in. Thus country A is assured of exports to country B to balance its imports. Sometimes each country may open an account in the other's Central Bank. In that case, exporters of each country receive payments from the Central Bank of their own country. The two Central Banks then clear the accounts, one against the other, at regular intervals, provision being made for a certain agreed balance. Lastly, there are the "payments agreements". Such an agreement is generally between a free exchange country, on the one hand, and an exchange control country, on the other. The free exchange country agrees to allow or encourage imports from the exchange control country on the condition that a given proportion of payments for such imports would be applied to paying interest on, and clearance of, past debt due from the exchange control country.

*Effects of exchange control.* Every exchange control country has to distribute foreign exchange among imports, tourists' expenditure, and debt services. Decisions have also to be taken in respect of kinds and quantities of commodities to be imported. Evidently, such decisions profoundly influence the production as well as consumption patterns. Then there is rationing by firms. Controls of all kinds are the bureaucrat's paradise and exchange control is no exception to it. It opens out vast scope for bribery and favouritism and is thus apt to lower the moral standards of the people. For traders, it is a source of many inconveniences. Procedure for procuring licences is generally complicated and involves much waste of time and energy.

In case many countries adopt exchange control, rationing by countries also becomes essential, because the currency of an exchange control country is not freely saleable or obtainable. Country A can import from another exchange control country B only up to the limit of its holdings of B's currency. Now, suppose country A has to import a

commodity from country *B*, but *B*'s currency is not available in the Central Pool of country *A*. Then country *A* must insist that country *B* accepts payment in *A*'s currency. Country *B* may agree to accept it because of shrinking markets. By assumption, country *B* has little demand for *A*'s goods. Thus a blocked balance appears in the Central Pool of country *B*. It then tries to spend the blocked balance by making purchases from country *A* even at higher prices. Thus uncollectible balances, rather than comparative costs, come to determine the direction of foreign trade. Bilateralism, or even barter, develops.

It is sometimes said that exchange controls lead to shrinkage in international trade. Every exchange control country reduces its imports and, because of higher internal price level, exports also decrease. One cannot, however, be dogmatic in that respect. We must take into account the fact that trade is sought to be encouraged by agreements, private compensation, multiple exchange rates, subsidies to exports, etc., etc. All that can be said with certainty is that trade is diverted from its natural course into artificial channels. Considerations other than cheapness become important. Quantity of international trade may or may not diminish, its quality certainly deteriorates and the benefit of such trade is less.

The real defense of the exchange control lies in the circumstances which lead to its adoption. It is specially suited for dealing with the problem of flight of capital. It may be said that exchange control stops imports of capital as well. But that question is not important, because fresh capital could not be expected under the circumstances. When capital is fleeing from a country, only a stupid foreigner would make a new investment there. Exchange control is also the only effective remedy for a chronically passive balance of payments in a period of acute depression. Moreover, it enables a country to follow independent policies at home to reduce unemployment. For countries, which are engaged in a war or which have adopted methods of planning for the development of their economies, exchange control is an effective instrument to make the best use of their limited earnings of foreign exchange. Incidentally, exchange control provides protection to many industries, enhances country's strength in trade bargaining, and enables the government to earn revenue by keeping a margin between selling and buying rates of foreign currencies. Modified by private compensation, and clearing and payments agreements, exchange control is helpful to those countries which find its adoption unavoidable.

## 5. ADMINISTRATIVE DEVICES

*Interpretation of rules.* Administrative devices refer to interpretation of customs' rules in a manner which proves harassing and discouraging to importers. If the duty is to be charged '*ad valorem*', customs officials may refuse to admit the validity of the invoice and may fix a price which is substantially higher than the actual price. 'Classifications of articles of imports invariably leave much scope for the customs authorities to be arbitrary in their decisions.' Thus, a chain

may be treated as a household article or a luxury article and the rate of duty may be much higher for the latter than for the former. In the same category may be placed the famous case of the Dutch manufacturer, whose figs were not allowed to be imported into U.S.A. because the figs had undergone a candying process and candied figs could not be admitted, because "Figs" and not "Candied Figs" was the item which could be found in the list of tariff rates. Cigarettes may not be allowed to enter the country on the plea that while each packet bore the name of the country of origin, each cigarette did not. Even veterinary and sanitary regulations are sometimes employed to embarrass the foreign trader.

### PROTECTIVE TARIFFS

*Meaning and forms of protection* The power of an industry to compete, in the home market, with the foreign producers may be enhanced by placing restrictions on imports. This is called giving protection to the home industry. Restrictions for purposes of protection may take the form of total prohibition or fixture of quotas, but the usual form it takes is that of levying a high import duty on that commodity. Protective duty, as it is called, must be high enough to raise the costs of the foreign products sufficiently, so as to make them equal to or higher than the costs of the home producer.

Restrictionism is the antonym of Free Trade. While restrictionism refers to the policy of reducing imports in general, protectionism is restricting imports of specific commodities to make more of the home market available to the indigenous producers. Hence, like restrictionism, protectionism is interference with Free Trade that is, with the flow of international trade in its "natural channels".

*Choice between free trade and protection* The question of Free Trade versus Protection has been controversial for centuries. Naturally, an avalanche of arguments and counter arguments has piled up. Economic as well as non-economic (including political and social) arguments have been advanced on both sides. We, as students of Economics, will consider only economic implications of protection. This is not to minimise the importance of non-economic considerations. The purpose is to delimit the field of study. It is for the administrator to weigh economic considerations against political, social and other considerations and make a final decision. We, on our part, would adjudicate the whole thing on economic basis.

International trade is international specialisation. Each country specialises in the production of those commodities for which its resources place it in an advantageous position. The gain from international trade would be reaped only if trade is allowed its free course. Protection may be recommended in some particular case. As a general policy, however, Free Trade is the method to benefit from international trade. Moreover, even where protection is recommended on economic considerations, it is recommended only for some period. Ultimate aim is Free Trade. Permanent protection may be recommended on political grounds or considerations of defence.

On economic grounds, permanent protection is not recommended. Hence, though protection may be recommended for some period, yet Free Trade must remain the general policy and the ultimate aim even where protection is approved.

Protection has variously been recommended on grounds of development of infant industries, self-sufficiency, diversification of industries, extension of employment opportunities, government revenue, and providing cover against dumping. We may consider these arguments one by one.

1. *Infant Industries.* An established industry enjoys a superiority over a newly started one in many respects. It can get skilled, trained and experienced workmen and entrepreneurs. It has established contacts with sources of raw materials as well as with sellers of its products. It may have made available to itself means of transport. A new industry has to acquire these facilities, contacts, and experience, and all this takes time. It may be that, considering availability of cheap labour, capital raw materials, power, market, and suitable climate for the production of a commodity, country *A* is better placed than country *B*, but country *B* has the advantage of having somehow made an earlier start. In these circumstances, if an endeavour is made to start the production of that commodity in country *A*, the attempt may not succeed. The new industry may be nipped in the bud in competition with the mature industry of country *B*. It is in such a case that the infant industry of country *A* is recommended for protection for a period till the requisite contacts, experience and skill have been acquired.

Obviously, the protected industry would in the initial stage be producing at higher costs and the home consumer would be paying the penalty in the form of higher price. This is a sacrifice which the present generation makes for posterity. When the hurdles have been crossed, the home industry would be in a position to do without protection and easily compete with the foreigner. Without protection this industry either could not come into existence, or would have taken a longer time to establish itself. Colbert rightly likened protective duties to "creches to teach the new manufacturers to walk."

Theoretically, the case for protecting infant industries, which can ultimately stand on their own legs, is very sound. In practice, however, many difficulties arise. In the first place, it is difficult to ascertain which industry would in fact be ultimately able to withstand foreign competition without protection. Secondly, protection very often lulls home producers to a sense of complacency. There remains little inducement to effect improvements in the methods of production. The most important difficulty has been summed up in the words: "Once an infant, ever an infant". vested interests arise and they resist the removal of, or even reduction in, the protective tariff. Protection in such cases becomes a permanent burden on the consumer without any corresponding gain, present or future, to the country.

**2 Self sufficiency** Mahatma Gandhi favoured a policy of over-all self-sufficiency on the ground that it will annihilate one important cause of international friction. When there is no foreign trade, the question of invading foreign countries for capturing foreign markets would not arise. Others recommend self-sufficiency in respect of specific categories of goods—defence requirements, food, raw materials and basic industries. It is generally agreed that a country ought to be self sufficient in respect of her military requirements, especially arms and ammunition. Defence, as Adam Smith well remarked, "is more important than opulence". It is obviously unwise to depend on others for tanks, cannons, guns and powder. Some people also hold that self sufficiency in respect of food is equally important. England depends on foreign countries for food. If during a war she is blockaded, she would immediately be obliged to come down to her knees. Similar arguments are also advanced for independence in raw materials for important industries. If war cuts off foreign supplies of food and raw materials people as well as industries would starve. Lastly, self-sufficiency in basic industries is recommended. The instance of India is often quoted. It is said that during the two World Wars, foreign supplies were cut off and there was a good void in the Indian market. But Indian industries could not expand in response to it because she could not produce the required machinery.

It may be noted that it is the strained international political relations and possibilities of war which form the basis of arguments in all the above cases. From the economic standpoint, if the above categories of goods are protected resources will get employed in uneconomic ways. National production and hence national welfare, will be lessened. And whether it would be wise to regulate normal peace economy on a war basis, is a question for the administrator to decide. On economic considerations alone protection to the above categories of goods cannot be upheld.

**3 Diversification of Industries** This argument takes two forms. First, specialisation implies concentration in a few industries. Thus, it is said, is not wise. Depression in any single industry would affect a sizable section of the population and thus cause widespread distress. Sources of employment should therefore, be diversified. With that aim in view, home industries which could otherwise not withstand foreign competition, may be brought into existence behind the screen of protection. But this argument strikes at the very root of the case for international specialisation. It seeks to ensure against an evil, which is imaginary. And it would be an argument against all division of labour.

The other form of the argument is that as agricultural countries are all trying to industrialise themselves, industrial countries should also develop their agriculture. As more industries spring up in agricultural countries, surplus food and raw materials available for export will diminish and their markets will no more be available. Industrial countries will then find themselves, in an impossible position. They shall get neither food for their people, nor raw materials for their

If all, or many, countries try the method of increasing employment by reducing imports, the only consequence would be a reduction in international trade and diversion of factors to less productive uses. Production and employment will fall everywhere.

As protective duties are levied, prices of import commodities rise and so does the cost of living. Real wages fall. If trade unions are well organised, they will clamour for a rise in money wages. If money wages increase employment in the protected industry may not rise or rise less, and employment in other industries may fall. There may be, on the whole, no increase in employment—or there may be an actual decrease.

If, in spite of protective duties, money wages do not rise, there will be more employment as a result of reduction in real wages. But if more employment is to be achieved by a reduction in real wages, there are better methods of doing that. Method of tariff increases is not a good method for that purpose, as by this resources are diverted into unprofitable channels.

The conclusion is that by protective duties employment may not increase. If at all it increases it may be because of reduction in real wages. It is advisable to use alternative methods of reducing unemployment than the method of protective duties.

**5. Government revenue** Protective duties, in addition to providing encouragement to industries, bring revenue to the government. In the balance sheet of protective duties, therefore, larger government earnings must be set on the credit side. However, it is uncertain if protective duties will really increase the revenue of the government.

Consider the case where revenue duties existed before the rate of duty was raised to make it protective duty. Total earning from this tax depends not only on the rate of duty but also on the quantity imported. If, as the rate is raised, the quantity imported contracts more than proportionately, total revenue from this item will be less than before. If, on the other hand, large quantities continue to be imported, it means that the duty is not high enough to give protection to the home industry. The two aims of protection and high government revenue are incompatible.

In case protective duty is levied where there was no duty before, some revenue will result from this item. But consumers will pay higher prices for imports and thus their taxable capacity is reduced. Hence though revenue from this item increases, total revenue may not increase. If, however, the duty is on such imports as the home producer can ultimately replace, in the longrun prosperity—hence taxable capacity—will increase.

**6. Cover against dumping** We have already seen that there are three possible causes which may lead to dumping.<sup>2</sup> The producer might have overestimated the demand in the home markets and now

prefers to sell the excess amount in some foreign market rather than spoil the home market. Secondly, may be that the producer is undercutting his rivals to weed them out. Or, lastly, dumping may result from the fact of increasing returns. or from difference in marginal revenues in the two markets at single monopoly price.

When a producer dumps his product to avoid spoiling the home market, that means he spoils the foreign market. The country, in whose market the product is being dumped, will be well advised to protect the home industry by levying a high duty on such imports. Similarly, the purpose of the producer, who undercuts his rivals, is to ultimately eliminate competition and then to raise the price. Temporary gain from lower price is insignificant against the ultimate loss from a higher price. Against such imports also protective duties may be levied. When, however, the producer produces more to benefit from increasing returns or differences in marginal revenue, and sells in the foreign market at a lower price, the benefit of lower price promises to be a permanent one to the country to which the goods are being dumped. In such a case protection will mean denying the country the benefit of cheaper imports.

Protection against dumping can, therefore, be recommended when dumping is a temporary event. If dumping promises to become permanent, protection against it is harmful to the interests of the country. But in practice, it is well-nigh impossible to determine the exact cause and nature of dumping. And it becomes difficult to decide whether it be protected against or not.

#### EXPANSION OF INTERNATIONAL TRADE

*Causes of increase in international trade.* Some factors have been at work during the last one hundred and fifty years, which have resulted in the expansion of international trade. The most important of these is the development in the means of transport and communication. Telegraph, cablegram and wireless transmission, on the one hand, and steamships and aeroplanes, on the other, have brought countries very close to one another. Time and distance having been thus annihilated, trade contracts between countries have naturally increased. Secondly, opening of the Suez and Panama Canals has shortened trade routes bringing an economy of thousands of miles of carriage. A third factor has been the increased international contacts resulting from colonialism as well as international conferences. British rule in India did result in more trade between India and Britain. Similarly, relations like those between U.S.A. and Philippines France and her dependencies, Britain and her colonies, provide opportunities to study each other's import requirements and export availabilities. The first international economic conference was held in 1927. Since then many more conferences have been held which have often brought representatives of countries together to discuss their mutual requirements and supplies. Organisations like ECAFE (Economic Commission For Asia and Far East) and OEEG (Organisation For European

Economic Co-operation) have frequently been discussing and recommending methods for promoting trade among countries of their respective regions. Another important factor has been advance of civilisation itself. The number of commodities produced in the world is progressively on the increase. And along with it wants have also gone on multiplying. Before the nineteenth century, neither were things like motor-cars, radios, rail and air travels, etc., available nor did people, very naturally, budget to spend on them. The list of new commodities is formidable. With their coming into existence international specialisation as well as international interdependence has increased.

*Commercial treaties* Commercial treaties are deliberate efforts on the part of countries to promote mutual trade. The treaties may relate to consular matters, rights of foreigners, execution of customs regulations and other allied matters. Economists have, however, come to attach a restricted meaning to the expression. In Economics the term "commercial treaties" refers to agreements in respect of tariff rates, quotas, or exchange restrictions. Agreement in respect of tariff rates may be called tariff agreements and those in respect of quotas and exchange restrictions may be called trade agreements. An agreement between two countries is a bilateral treaty in distinction to a multilateral treaty which is among more than two countries. A multilateral treaty may be a collective agreement between an associated group of countries like members of the Commonwealth of Nations, or it may be an international convention to which a majority of the countries of the world are signatories.

*Most favoured nation clause* An important clause in most of the commercial treaties is what has come to be known as the most favoured nation (m f n) clause. If this clause is embodied in a treaty between country A and country B, then country A promises to accord to the nationals and the goods of country B treatment which is not worse than the treatment it gives to the nationals and the goods of any other country C. Similarly does country B. There may be a pure most-favoured nation clause treaty or the clause may be included in other commercial treaties. Inclusion of the m f n clause in most of the commercial treaties has been an important factor in helping towards extension of international trade.

Agreements to accord m f n treatment have been acclaimed as the most suitable policy for many countries. Free Trade countries have no concessions to give. All that they have to offer is a promise that they would not levy any duties or would not raise revenue duties. Most-favoured-nation system is appropriate to their requirements. This system also suits those countries which are particular to keep their fiscal autonomy intact. It permits such countries to raise import duties or levy new ones only if there is no discrimination against the agreement countries. In fact, the chief merit of the m f n system is that it stands for equality of treatment and elimination of discrimination.

*Conditional and unconditional m. f. n. clause.* Most-favoured-nation clause—the promise to treat imports from the agreement country no worse than imports from any other country—may be of unconditional variety. In case it is unconditional, if one of the signatories to the agreement gives any tariff concession to a third country, the other country immediately and automatically becomes entitled to it. If it is a conditional m. f. n. clause, concession granted by a signatory to a third party can be claimed by the other signatory only if the latter gives to the former the same or an equal concession which the third party has given.

The chief argument against unconditional form of m.f.n. clauses is that it reduces the possibilities of further treaties. Further agreements are either not concluded, or only limited concessions are exchanged. Provisions are cleverly worded so as to circumvent in all possible ways their extension by m.f.n. clause. Countries are reluctant to participate in international conventions, as non-participants can claim concessions as a matter of right and without giving any concessions in return. Negatively, it is also claimed that even if conditional m.f.n. clause does not promise equality of tariffs, it does offer equality of opportunity.

Protagonists of the unconditional m.f.n. clauses hold that the conditional variety is the very negation of the most-favoured-nation treatment. We are well aware that “equal concessions” are difficult to define. There is no objective standard by which equality could be established. Suppose, for instance, countries *A* and *B* have an m.f.n. agreement and country *A* lowers import duty on wheat from country *C* while country *C* lowers duty on toys from Country *A*. Now, country *B* may be sending wheat to country *A*, but may be importing sugar, and not toys, from country *A*. How much reduction in duty on sugar should be considered equal to a given reduction in the duty on toys, is not possible to say. Moreover, the basic aim of m.f.n. system is that neither of the parties is, in matters of trade and tariffs, discriminated against by the other. Conditional form of m.f.n. clause does not rule out discrimination. And neither does it simplify trade nor eliminate economic conflicts. Lastly, conditional clause proves unfair for those countries which have very few or very low duties. Such countries have few concessions to offer and thus cannot benefit even from m.f.n. system.

*Trade agreements.* Tariff agreements cannot solve the problems of import quotas or exchange control. For that purpose trade agreements are appropriate. Like tariff agreements, trade agreements may also include a most-favoured-nation clause. India has in recent years concluded trade agreements with some twenty countries and all these agreements include a most-favoured-nation clause. To each one of these agreements are attached two schedules indicating the export availabilities in the two countries. Amounts of various commodities are specified in respect of which the two countries promise to issue import and export licences, provided dealers

apply for them. It is not binding that those amounts must be imported. The only obligation is that the authorities would not refuse licences up to specified amounts.

*Real promoters of international trade.* It must be clearly borne in mind that treaties by themselves do not create trade. All that they can do is to create a proper atmosphere for the development of trade. Political stability and peace, high level of output and employment, and the will and determination on the part of the dealers to make the fullest use of international specialisation, are some of the factors which determine the extent of international trade.

## CHAPTER XXXII

### FOREIGN EXCHANGE

#### PRELIMINARY CONSIDERATIONS

*Meaning of exchange rate.* Just as there are markets for purchase and sale of commodities, similarly there are markets for the purchase and sale of foreign currencies. These are known as foreign exchange markets. The value, which a unit of home currency commands in terms of foreign currencies in such markets, is known as the foreign exchange rate. Though the exchange value of home currency can be expressed in as many terms as there are foreign currencies, yet all these expressions convey the same value. For instance, exchange rate of rupee may be expressed as 1/5th of a dollar, or 1/15th of a pound sterling.<sup>1</sup> But, as a pound will also be exchangeable for three dollars, the two expressions refer to the same value. Foreign value of a currency is, therefore, spoken of as an exchange rate, rather than exchange rates.

*Assumptions.* In the discussion of foreign exchanges we shall, for convenience, assume that there are only two countries, *A* and *B*. We shall name their respective currencies as *A*-money and *B*-money. *A* will be taken as the home country and *B* (representing the rest of the world) as foreign country. When a unit of *A*-money comes to command more of *B*-money, exchange rate will be said to have risen. Conversely, when a given quantity of *A*-money exchanges for less of *B*-money, exchange rate will be spoken of as having fallen.

*Demand and supply.* A casual view of foreign exchange operations gives the impression that there are four factors involved in determining the exchange rate, namely, the supply of *A*-money, the demand for *A*-money, the supply of *B*-money, and the demand for *B*-money. On a little reflection, however, it will be realised that the demand for *B*-money is synonymous with the supply of *A*-money, and that the supply of *B*-money is the same thing as the demand for *A*-money. A purchaser of foreign currency (*B*-money) offers home currency (*A*-money) in exchange for it. A supply of home currency (*A*-money) is, therefore, simultaneously created with the demand for foreign currency (*B*-money.) The larger the quantity of *B*-money which he desires to purchase, the larger, it means, is the amount of *A*-money which he offers. For instance, suppose the rate of exchange between rupees and dollars is 5:1. A person who purchases ten dollars can also be said to have sold fifty rupees. Similarly a purchaser of twenty dollars creates a supply of one hundred rupees. Conversely, a seller of foreign currency creates a demand for home currency.

<sup>1</sup> The exchange rates quoted here are a little different from the actual exchange rate for a rupee is \$ 21/100 or £ 13/10.

Thus there are two factors involved in determining the value of a currency. These are the supply of it and the demand for it. Exchange rate of a currency is determined by the interaction of the forces of its supply and demand. Equilibrium rate is one which brings into balance these two sets of forces.

*Market rate and normal rate.* There is an exchange rate at which equilibrium is established between demand and supply on any market day. Such a rate is the market rate. Market exchange rate fluctuates from day to day on account of changes in the conditions of demand and supply. But there is a level round which these fluctuations occur and towards which the market rate is always tending. This level is called the normal rate.

*Different theories.* When a country is not on a metallic standard and the government does not regulate the exchange rate so that it is free to move, determination of the market rate is explained by the Balance of Payments Theory and the determination of the normal rate is explained by the Theory of Purchasing Power Parity. In respect of exchange rate between countries on the Gold Standard or any other monometallic standard the relevant theory is the Mint Par of Exchange Theory. We shall take up the latter first.

#### MINT PAR OF EXCHANGE THEORY

*Mint Par.* As has already been observed, this theory explains the determination of exchange rate between countries which are on the same monometallic standard. Our two countries *A* and *B*, are, therefore, now on the gold standard say, the gold currency standard, to be concrete. Both *A* money and *B* money are gold coins which can be melted and can be coined freely. Also, there is no restriction, whatsoever, on gold movements between *A* and *B*.

As explained in Chapter XXVIII, exchange rate between the two currencies will depend upon their respective mint values. A given quantity of gold is convertible at the mint in country *A* into one unit of *A* money. If the same quantity of gold is coined in country *B* into, say, five units of *B* money, then the rate of exchange will be 1.5. It can neither be higher nor lower. If the rate is higher, say 1.6, people will exchange *A* money for *B* money, melt it and offer the gold thus obtained for minting in country *A*. As *B* money is melted, its supply decreases and its value will rise. More of *A* money is minted, therefore, its supply increases and its value will fall. As a result of both these effects, value of 1 unit of *A* money will fall to five units of *B* money. Quite similarly, if the rate is lower than 1.5, gold will be exported from country *A*, which will increase the quantity of *B* money and reduce that of *A* money. The value of *A* money will rise. Thus the rate of exchange cannot, for any considerable time, be higher or lower than 1.5. The rate of exchange thus established between the two currencies in accordance with their mint rates is known as the *mint par of exchange*.

*Specie points.* The above analysis ignores one important factor. It is the cost of transportation, in the wider sense of the term (*i.e.*, including customs duties, and banking, insurance and other charges). For instance, suppose the amount of gold contained in one unit of *A*-money, costs  $\frac{1}{2}$  unit of *B*-money to transport from one country to the other. Then the rate of exchange may fall as low as  $1:4\frac{1}{2}$  or may rise as high as  $1:5\frac{1}{2}$ . Let us explain this.

A resident of country *A*, who has to make a payment to a dealer in country *B*, does so either by exporting gold or by purchasing a bill of exchange. Suppose the bill of exchange is available dear, say, it is available at the rate,  $1:4\frac{1}{2}$ . The choice is then between procuring a command over the foreign currency by a bill of exchange at the rate of  $1:4\frac{1}{2}$  and procuring foreign currency by export of gold. By melting a unit of his currency, he procures gold which will be convertible into five units of *B*-money, but in doing so he has to incur a cost of  $\frac{1}{2}$  unit of *B*-money. In effect, therefore, he gets  $4\frac{1}{2}$  units of *B*-money for one unit of *A*-money. So long as, therefore, he can purchase a bill of exchange at the rate of more than  $4\frac{1}{2}$  units of *B*-moneys for one unit of *A*-money, he will prefer it. Of course, if the rate quoted in the bill gives him less than  $4\frac{1}{2}$  units of *B*-money per unit of *A*-money, he will export gold.

Similarly, an importer in country *B* will rather export gold than purchase a bill of exchange if, in respect of the latter, he has to pay at the rate of more than  $5\frac{1}{2}$  units of *B*-money for one unit of *A*-money. But so long as the value of a unit of *A*-money is less than  $5\frac{1}{2}$  units of *B*-money, he will prefer a bill of exchange to exporting gold.

Thus even between gold standard countries there is not a fixed rate of exchange. There are two limits between which the exchange rate may fluctuate. These limits are called the specie points. From the point of view of country *A*, in our example above,  $1:4\frac{1}{2}$  is the lower specie point. At this rate gold begins to be exported from this country. It is, therefore, also its gold-export point. The other limit, *i.e.*,  $1:5\frac{1}{2}$ , is the upper specie point and is also the gold-import point. What is gold-export point for country *A*, is gold-import point for country *B*, and the former's gold-import point is the latter's gold-export point.

*Specie points and elasticities of demand and supply.* The rate of exchange between two countries on the gold standard may fluctuate between the two specie points. It tends to be such that the demand for and the supply of bills of exchange become equal. If the demand in country *A* for bills of exchange, (which represent titles to *B*-money), is greater than the supply of such bills, the rate of exchange or the external value of *A*-money will fall (*i.e.*, that of *B*-money will rise) till the demand and supply are equalised. Contrariwise, if the demand for such bills falls short of the supply, rate of exchange will so change that the two are balanced. Now, it may be that the demand for and the supply of bills of exchange at the prevailing

rate of exchange are widely different, so that no change in it within the range of specie points can equilise it. What will happen in that case?

The problem can be more clearly stated with the help of a diagram. In Fig. 33.1,  $SS$  is the supply curve and  $D_1D_1$ , the demand curve  $OQ$ , is the upper specie point. Equilibrium will be reached with rate of exchange  $P_1M_1$ . Now suppose that country  $B$  imports securities from (*i.e.*, exports capital to) country  $A$ . Demand for  $A$  money will increase. Let the new demand curve be  $D_2D_2$ . Rate of exchange will rise to  $P_2M_2$ , at which the larger supply,  $OM_2$ , equals amount demanded.

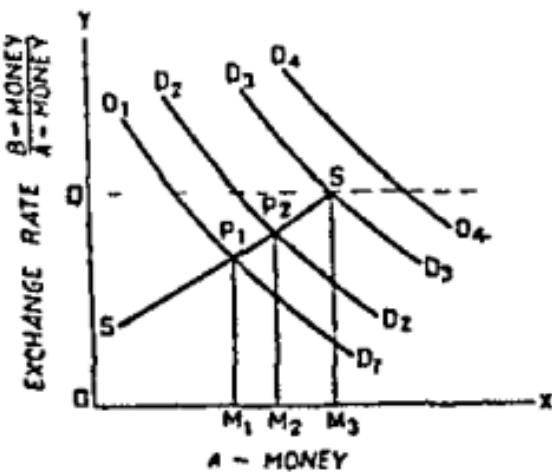


Fig. 33.1

Similarly, if the demand curve shifts to position  $D_3D_3$ , rate of exchange will rise to  $S_3M_3$ , which will extend supply sufficiently to balance demand. If, however,

the demand curve shifts further to  $D_4D_4$ , the rate of exchange will not rise any more because the specie point has been reached. As the rate of exchange does not rise further, the supply of  $A$  money (bills of exchange) will not rise beyond  $OM_3$ . How does the problem solve itself?

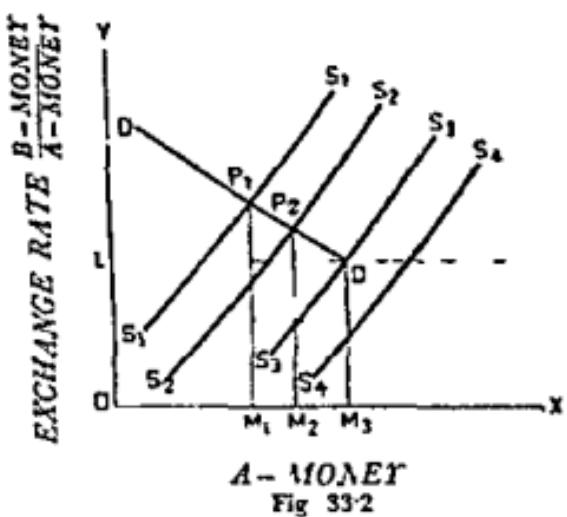


Fig. 33.2

The answer is that the balance will be made up by the export of gold. The fact of the matter is that at this point the exchange rate has reached the limit of its capacity to perform the equilibrating function. But at this point the supply of gold becomes perfectly elastic and gold movements take over the function of balancing demand and supply.

In the performance of this function, gold movements are assisted by two factors. First, gold movements produce other changes in the two countries. Shipment of gold from country  $B$  to country  $A$

lowers incomes and expenditures in the former and raises them in the latter. Prices may also rise in country A and fall in country B. Thus exports from B are encouraged and supply of A-money increases. And demand for A-money decreases due to reduction of imports into country B. Secondly, export of gold from country B leads to expansion of credit in country A and its contraction in country B. These changes in credit produce the same effects as shipment of gold itself.

When exchange rate has fallen to the lower specie point due to an increase in the supply of A-money ( $DM_2$  in Fig. 33.2), and still the demand for A-money falls short of its supply, gold will be exported from country A. This, assisted by changes in credit, will, quite in a similar manner, bring about equilibrium.

### BALANCE OF PAYMENTS THEORY

*The Standards.* Now we come to the case of free exchanges. This means that country A and country B (or, at least one of them) are on paper standard. Neither the value of A-money nor of B-money is linked with any metal—gold, silver or any other. These currencies are accepted because of their legal tender status. And their internal values are maintained by regulation of their supplies to the public.

*The crude version.* In its crude form the theory was stated thus: "Exchange rate of the currency of a country depends on its balance of payments. A favourable balance of payments pushes the rate of exchange up, and an unfavourable balance causes it to fall." This version of the theory fails to recognize that balance of payments itself is not independent of the rate of exchange. Values of the credit and the debit items do obviously depend upon the exchange rate. At a lower rate of exchange, given items will be worth less foreign money. Also, exports will increase. Hence credit items will increase. Similarly, debit items diminish and so does their value.

The crude version of the balance of payments theory, thus, treats the credit and debit sides of the balance of payments as solids, while they must be treated as liquids. In economic parlance, credit and debit items are treated as given quantities while they must

and services, and, hence, less of *A* money. I.e., when the rate of exchange rises, less of *A* money is demanded and vice versa. This means that the demand curve for a currency in the foreign exchange market slopes downwards to the right.

Offer of home currency implies offer of command over domestic goods and services. And a fall in the exchange rate means a fall in the price offered for such a command. In accordance with the law of supply, the amount offered for sale will be less. Thus when exchange rate falls, supply of home currency (and of titles to it) in the foreign exchange market declines. And when the exchange rate rises, the amount supplied of it extends. Supply curve of a currency in the foreign exchange market, thus slopes upwards to the right.

*Elasticities of demand and supply curves.* If the quantity of home currency demanded in the foreign exchange market is the same whatever the rate of exchange, the demand is inelastic. In our example, this will happen if country *B* has a fixed payment to make every year in *A* money. On the other hand, if country *A* has to make a fixed payment in *B* money to country *B* every year the supply of *A* money will be inelastic.

Demand for a currency will be perfectly elastic if there is an unlimited purchaser of it at the prevailing rate. Similarly, supply of it will be perfectly elastic if there is an unlimited seller. Obviously, none else than a government can be such a purchaser or seller. But, while a government can be an unlimited supplier of home currency, it cannot be an unlimited purchaser, because it does not possess an unlimited stock of foreign exchange.

*Determination of exchange rate.* Let us now draw the supply and demand curves of *A* money. In Fig. 33.3, exchange rate (*B* money/*A* money) is shown along the vertical axis and the quantity of *A* money is shown along the horizontal axis. *DD* is the demand curve and *SS* the supply curve. The former slants downwards while the latter slants upwards. The two curves intersect at *P*. This is the point of equilibrium. Equilibrium rate of exchange is *OL* (or *PM*). At this rate quantity of *A* money demanded equals the quantity supplied both being *OM*. At any other rate there will be an inequality between the two and hence disequilibrium. For instance, if the

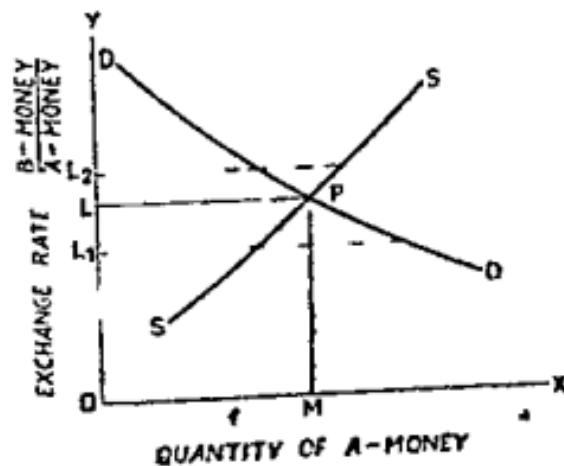


Fig. 33.3

rate is  $OL_1$ , amount demanded exceeds amount offered for sale. On the other hand, if it is  $OL_2$ , amount offered for sale exceeds amount demanded. It is only with exchange rate  $OL$  that both are equal.

*Changes in demand and supply.* Demand curve for a currency shows the different amounts of it which will be purchased at various rates of exchange. It assumes other determinants of demand as given. These other factors are tastes, internal costs and prices, tariffs, costs of transportation, interest rates and political and other factors leading to an increase in trade and capital flows. A change in any one, or more, of these factors will change demand, i.e., will cause a shift in the demand curve. For instance, if country  $B$  raises its import duties, its imports from country  $A$ , at any given rate of exchange, will be less than before and, hence, the demand curve for  $A$ -money will shift to the left.

Changes in the supply of a currency are caused by similar factors because the supply of one currency is synonymous with the demand for the other currency. For instance, if country  $A$  raises import duties,  $B$ 's exports to it will decrease. The result of it may be expressed either by saying that demand for  $B$ -money will decrease or that the supply of  $A$ -money will decrease.

The effect of an increase in demand is to raise the exchange rate to extend the equilibrium amount.

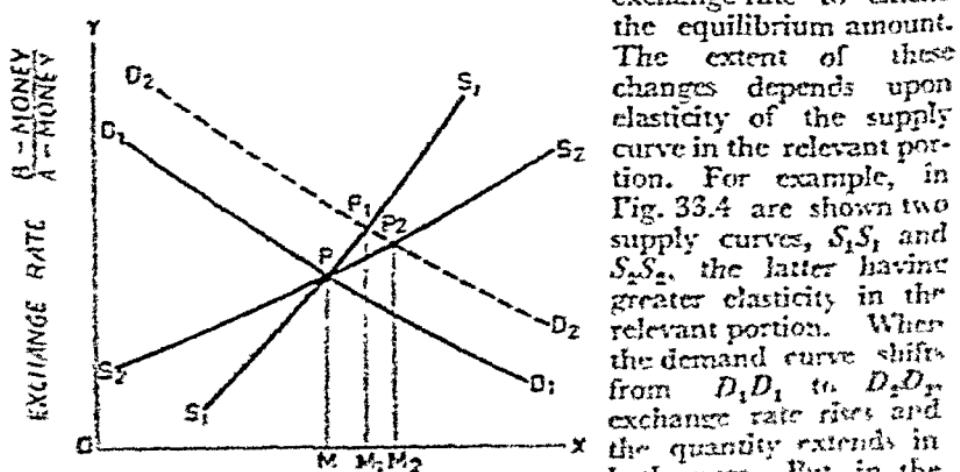


Fig. 33.4

the change is reflected more in the extension of quantity than in the rise of exchange rate. On the other hand, in the case of  $S_1S_1$ , the change in exchange rate is more and change in quantity less. Hence the greater the elasticity of supply, the greater is the effect of a change in demand on amount and less is the effect on exchange rate and vice versa. Going to the extreme position, if supply is perfectly elastic, there will be no change in amount and the whole effect will consist of a change in the exchange rate. Similarly, if supply is perfectly inelastic, there will be change in the exchange rate, but the whole effect

being on amount. What is true of an increase in demand is also *mutatis mutandis* true of a decrease in demand. The effect of an increase in supply is to lower the exchange rate and extend the equilibrium amount. The effect of a decrease in supply is just the reverse.

Fig. 33.5 shows that the effect of a change in supply depend on the elasticity of the demand curve in the relevant portion.  $D_1D_1$  and  $D_2D_2$  are two demand curves, the latter having greater elasticity of demand in the relevant portion. When the supply curve shifts from  $S_1S_1$  to  $S_2S_2$ , there is an extension in the amount and a fall in the exchange rate in both cases. With  $D_1D_1$ , however, the change is reflected more in a fall in the exchange rather than in an extension of the amount. Reverse is the case with  $D_2D_2$ . Hence the greater the elasticity of demand the greater is the extension in the amount and the less is the fall in the exchange rate and vice versa. When demand is inelastic there is no effect on the amount and when the demand is perfectly elastic, there is no effect on the exchange rate.

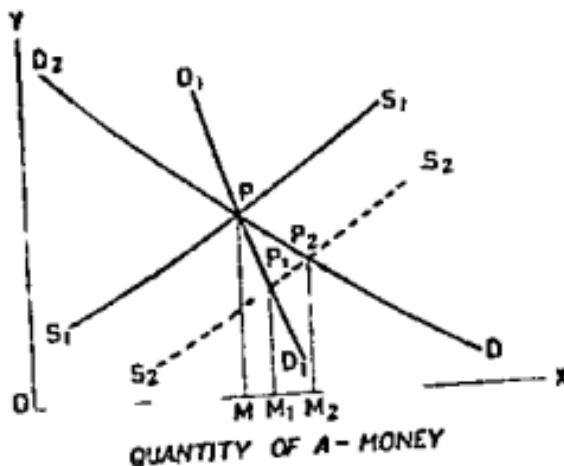


Fig. 33.5

### PURCHASING POWER PARITY THEOREM

*Outline of the theory.* When *A* money is exchanged for *B* money what in reality have been exchanged are two purchasing powers. Command over goods and services in country *A* has been given to secure command over goods and services in country *B*. So that the rate of exchange is in equilibrium, it is necessary that the goods and services surrendered have the same value as the goods and services secured. To be more concrete, if the rate of exchange between *A* money and *B* money is 1.5, then the quantity of goods and services (in general), which one unit of *A* money can purchase in country *A* must command in country *B* a price of five units of *B* money. If it is not so there will be disequilibrium.

For instance, suppose the rate of exchange between the two countries is 1.5, but the price levels in the two countries are such that what can be had for one unit of *A* money in country *A*, can be purchased in country *B* for four units of *B* money. Price level in country *B* is, then, lower than in country *A*. Exports from the former will be large

and country *A* will have an adverse balance of payments. Either the price level in country *B* will rise as a result of large exports, or the same in country *A* will fall due to large imports, or the exchange rate will change as a result of imbalance. It may also be that two or three of these changes occur simultaneously till equilibrium position is reached. In other words, in a state of equilibrium the exchange rate must correctly reflect the price levels in the two countries. The exchange rate settles at a level where the price levels of the two countries are made equal.

The theory can be stated in yet another manner. Goods and services, which a unit of *A*-money can purchase in its own country, measure its internal value. When this money is converted into *B*-money, a command over goods and services of country *B* is secured. This is the external value of *A*-money. The rate of exchange must be such that the internal value of a currency equals its external value.

*Price levels of domestic goods and international goods.* There are certain commodities which cannot be exported, e.g., houses. Such commodities may be called domestic goods. There are other commodities which are either being exported or can be exported if prices abroad are suitable. These may be called international goods. The question, then, arises whether the price levels, which exchange rate equalises, are the general price levels (*i.e.* of domestic goods and international goods taken together) or the price levels of international goods only.

If there is disequilibrium, equilibrium is brought about by the excess of exports over imports in one country and the excess of imports over exports in the other. It is only the international goods which can be exported and imported. It is, therefore, their price levels alone which are equalised. Differences in the price levels of domestic goods may exist and yet they will continue to exist because there is no equilibrating element in them.

It is sometimes suggested that when prices of international goods rise (or fall) in a country, prices of domestic good also rise (or fall) in sympathy. Hence, it is said, when price levels of international goods are equal in two countries, general price levels must also be equal. But the argument is not sound. No doubt, there is generally a sympathetic change in the prices of domestic goods when there is a change in the price level of international goods. Yet there is no reason to believe that the change in the prices of domestic goods must be *as much as* the change in the prices of international goods. Hence the price levels, to which the purchasing power parity refers, can be those of international goods only.

*Exchange rate does not equalise price levels of international goods.* Modified as above, the theory comes to be that such an exchange rate will prevail between the two currencies as equalises the price levels of international goods in the two countries. The theory "free" from the costs of transportation, as well as restrictions. If

we assume that there are no customs duties, nor any charges of packing, transport, banking, insurance, etc., there is little in the theory which is objectionable. In such an imaginary world not only price level of international goods, but also prices of each individual international commodity, will be equal everywhere.

As things are, however, there are costs of transportation to be incurred on goods traded in. Prices of exports of country A are lower in country A and higher in country B. Similarly, prices of imports of country A are higher in country A than in country B. Thus, one set of international goods (exports) have a lower price level in country A and another set of these goods (imports) have a higher price level. The quantities and nature of commodities in the two sets are different. There is, therefore, no reason to believe that the two differences will cancel out.

Thus price levels (even of international goods) in the two countries may be, and generally are, different. The difference arises on account of costs of transportation. Let  $P_a$  and  $P_b$  be respectively, the price levels in countries A and B and let  $R$  be the rate of exchange. Then we have reached the following conclusions.

If there are no costs of transportation,  $P_a = P_b \times R$

With costs of transportation,  $P_a = P_b \times R \times k$ , where  $k$  represents the difference in the two price levels on account of costs of transportation.

*Purchasing power parity and changes in the price level.* It is sometimes suggested that if the purchasing power parity theory does not apply to the price levels at any point of time, it does apply to changes in the price levels. To quote Gustav Cassel, "It is only when we know the exchange rate which represents a certain equilibrium that we can calculate the rate which represents the same equilibrium at an altered value of the monetary units of the two countries."<sup>2</sup> For instance, suppose in a position of equilibrium the rate of exchange between A money and B money is 1.5. Further suppose that, as a result of an increase in the media of exchange in country B, price level doubles, price level in country A remaining the same. It means that the internal value of B money has been halved so its external value will also be halved i.e. the rate of exchange will become 1.10. Similarly, if the price level in country A doubles and the same in country B trebles, the rate of exchange will be 2.15 or 1.7½.

Even this modification of the theory is unhelpful. The above effects of changes in the price levels would materialise exactly as shown, only if the difference in the price levels on account of costs of transportation remains the same. But, in the first place, price levels change unequally. Secondly, when price levels change, prices of individual commodities change unequally. There is consequently, a change in

<sup>2</sup> *Money And Foreign Exchange After 1914* p. 44

<sup>3</sup> The formula for calculation is  $\frac{R'}{R} = \frac{P_a'}{P_a} = \frac{P_b'}{P_b}$

the volumes and contents of exports and imports. Differences due to costs of transportation cannot remain the same.

The above argument can be stated more clearly with the help of algebraic symbols. Let, in the initial position of equilibrium, price levels in countries  $A$  and  $B$  be, respectively,  $P_a$  and  $P_b$ , and  $R$  the exchange rate. Let at a later date,  $P_a'$  and  $P_b'$  be the price levels and  $R'$  the rate of exchange. Let also  $k$  and  $k'$  represent differences due to the costs of transportation. Now, purchasing power parity theory as applied to changes in the price levels would conclude that,

$$R' \div R = \frac{P_a'}{P_b} \div \frac{P_b'}{P_a}$$

We know that,  $P_a = P_b \times R \times k$   
and,  $P_a' = P_b' \times R' \times k'$

$$\therefore R' \div R = \frac{P_a'}{P_a} \div \left\{ \frac{P_b'}{P_b} \times \frac{k'}{k} \right\}$$

Obviously, then, the conclusion of the purchasing power parity theory holds only if  $k$  and  $k'$  are equal. And we have no reason to assume that they will be equal. On the other hand, they are most likely to be unequal on account of changes in the volumes and contents of exports and imports. It would be very rarely indeed that they are equal.

*Conclusion.* The purchasing power parity theory brings out one important fact, namely, that the price levels of any two countries which have trading relations are interconnected. Suppose exchange rate between two currencies is fixed. Then, if one country expands its currency so that prices rise high, price level of the other country will also tend to rise. When exchange rate is free, large issues of currency and the consequent rise in the price level in one country, will either change the exchange rate or the price level in the other country or both. It is generally changes, both, in the exchange rate as well as in the foreign price level, which bring about the necessary adjustment.

The theory falters when it endeavours to establish a mathematically precise relation between the price levels, on the one hand, and the exchange rate, on the other. Existence of costs of transportation and customs duties are factors which make the existence of such a precise relation impossible. In fact, it is possible to keep the price level of a country very much isolated from the price level in the outside world. The validity of this statement becomes apparent when we remember that there is no relation, whatsoever, of the price level of a country with that of the outside world if it closes its economy to trade with other countries.

#### OBJECTIVES OF MONETARY POLICY

*Two choices.* We are now in a position to discuss the question of objectives of monetary policy. Every country has to take account

of the fact that price levels and incomes and expenditures are not stable in the world. The theory of purchasing power parity tells us that fluctuations in the price levels of foreign countries reflect themselves either in changes in the exchange rate or in the price level of the country concerned, or both. The country in question may decide upon some policy in respect of its exchange rate and leave the domestic prices, incomes and employment to adjust themselves to these changes. Or, it may adopt some definite policy in respect of domestic prices, incomes, and employment and leave the exchange rate to adjust itself accordingly. In other words the choice is between, on the one hand, a policy operating on the international front and throwing the burden of adjustment on internal prices and incomes, and, on the other, a policy operating on the domestic front and letting exchange rate fluctuate accordingly. Before making a selection, let us see what are the implications of the two choices.

**I. Operation of policy on international front** There are three possible courses in respect of policy operating on exchange rate. It may aim at securing a continuous fall in exchange rate, or a continuous rise exchange rate, or a stable exchange rate.

**1 Continuous depreciation** Suppose the government regulates its monetary policy that the exchange rate of the currency is continuously falling. Exports will be progressively pushed up and imports reduced. It is, however, not certain that exchange earning will be increasing. For, all depends upon elasticities of demand for and supply of imports and exports. But even if net exchange earnings go on increasing, of what use will it be to the people? After all, exchange earnings are meant for spending and not for needlessly piling upon. And piling up foreign exchange is all the more stupid if it is procured at an ever-increasing price.

There is thus no positive gain in adopting a continuously falling exchange rate as the basis of monetary policy. On the other hand, there is a definite disadvantage. Starting from a position of equilibrium, every devaluation of currency will lead to inflation with all its attendant evils.

**2 Continuous appreciation** Quite similarly, there is no point in adopting a policy of a continuously rising exchange rate. This will discourage exports and encourage imports, thus causing difficulties of balance of payments. And continuous appreciation in exchange rate will cause depression which will continuously deepen, so that incomes, employment, and prices fall progressively. Such consequences are so dreadful that no sane person will advocate the adoption of a policy of this type.

**3 Stable exchange rate** The only monetary policy operating on the international front, which makes any sense, is maintaining stability of the exchange rate. As has been pointed out at several places, stable exchange rates promote foreign trade as well as international movements of capital. International trade being international specialisation, aggregate production increases and the participants share this gain.

*II. Operation of policy on internal front.* There are four possible courses open to the monetary authority in this respect. It may so regulate its monetary policy that the price level continuously falls, or it continuously rises, or it remains stable. The fourth course is known as a policy of anticyclical adjustment.

1. *Falling prices.* Those who stand for a continuously falling price level, argue that production is increasing in almost every country, and the only way in which wage earners and fixed-incomists can share this prosperity is a falling price level. But the advocates of such a policy do not realise that it will harm those very interests for whom it is advocated. A constantly falling price level will reduce profits and produce depression. Unemployment will be rampant and ever increasing. As incomes will fall, the very purpose of economic policy is defeated.

2. *Rising prices.* Advocates of a policy of rising prices advance two main arguments in support of their contention. First, rising prices increase profit and, consequently, employment and incomes. Secondly, rising prices reduce the burden of public debt. Conscious of the fact that a rising price level will cause inflation, they advocate a slowly rising price level which may serve as a tonic for the economic system. With such a policy, however, fixed incomists and wage earners will be constant sufferers. There is no justification for a continued discrimination against a class of people who so much need to be helped out of the quagmire into which evils of the industrial system have thrown them.

3. *Stable prices.* Much can be said in favour of a stable price level. It reduces risks of production and trade and promotes confidence in the economy. Capital is attracted from outside. At home hoards dwindle to the minimum. Production, employment, and incomes increase. Moreover, stable prices do not discriminate against any class—neither against wage earners, rentiers and creditors, nor against producers and debtors.

Stabilisation of prices at any level is not helpful. If the country has been through a period of depression, stabilisation of prices would freeze the incomes and employment at a low level. Similarly, if there has been a steep inflation, stabilisation of prices at a high level may not restore confidence and may cause hardship and inconvenience. After a depression, prices must be raised to ensure full employment, and after a boom, they must be brought down to effectively curb inflation.

4. *Anticyclical policy.* Questions of incomes and employment occupy a premier place in the aims of economic policy. Monetary policy, being an integral part of economic policy, must accord them a place of primary importance. In a period of depression, it becomes the duty of the monetary authority to adopt measures which step up investment and consumption, so that prices pick up and recovery starts. Similarly, in a period of boom, a cut must be brought about in investment and consumption, so that inflationary tendencies are curbed. Such a policy is called anticyclical policy.

*Comparison of the two choices* Monetary policy, operating on exchanges, would endeavour to keep the exchange rate stable while if it operates on the domestic front, it would endeavour to stabilise prices at the level of full employment. It is between these two that the choice lies.

Stable exchange rate is recommended for various reasons. It is said that changes in the exchange rate are more easily perceived than equal changes in the price level. Consequently, comparatively much smaller changes in the exchange rate give rise to pecuniary activity and shake confidence. Hence even small changes in exchange rate substantially affect trade and financial relations with foreign countries. Also, some countries have had very bitter experiences of hyper inflation. Such inflations were accompanied by steep falls in the exchange values of their currencies. Every fall in the exchange rate is, therefore, apt to be viewed with alarm and hence is likely to shake confidence of the people. For this reason also stability in exchange rate is essential. Moreover countries depend for their food raw material, and other essential requirements on the outside world. For them, stability in foreign trade relations is necessary. And there is hardly any country which does not depend for one essential requirement or the other on foreign countries. Lastly, it is pointed out that severe fluctuations in the exchange rate cause internal instability. If imports are cut off or exports increase, prices rise at home. If changes in foreign trade are intense, dislocation in internal economy is also intense.

That domestic economic requirements should be given precedence over requirements of foreign trade is easy to understand. In the case of almost every country, internal trade is far more important than foreign trade. Interests of internal trade are, therefore, more important. But the more important point is that increasing incomes and full employment are the fundamental objectives of all economic policy. It cannot be any different with monetary policy. Hence monetary policy must keep these as its direct objectives. Even international trade will deserve to be promoted only if it increases incomes and employment at home.

The conclusion is that monetary policy must primarily operate on the domestic front for increasing employment and raising real incomes, avoiding at the same time the dangerous inflation. But while exchange rate must not be rigidly controlled at a level, it may be influenced every now and then by purchase and sale of foreign exchange. The rate must not be allowed to fluctuate violently, nor to deviate much from the equilibrium rate.

## CHAPTER XXXIV

### THEORY OF PLANNING

#### WHAT IS PLANNING ?

*Interference is as old as governments.* Ever since the system of governments and ruled people came into existence, there has been some interference in the economic activities of the people by the ruling authority. Sometimes, this interference has come for the personal benefit of the rulers (taxing the people for the rulers' purse). In some cases, the object has been to secure revenues for the welfare of the ruled class or a section thereof. In the later stages of capitalism, interference by the government has often been actuated by a desire to rectify the wrongs of the capitalist system, such as, periodic unemployment in the labour and capital markets, exploitation of consumers by big monopolies, inequalities in incomes, appalling and inhuman labour conditions etc., etc. All these have, however, meant government interference in a piecemeal fashion. Even when it aimed at undoing the wrongs of the economic system, it attempted to do so without changing the basic structure and working of the prevailing economic order itself. Moreover, these activities have generally lacked cohesion and co-ordination.

*Meaning of Planning.* Mere interference with the working of free enterprise and price mechanism is not planning. Planning implies setting the pattern of future economic development as well as making a conscious and continuous effort for the attainment of this pattern. It involves not only defining a system of objectives in respect of economic growth, but also formulating methods for the achievement of these objectives. It means much more than casual, occasional, and sporadic touches to some aspects of economic activity<sup>1</sup>. It means a rational control of economic forces with a view to integrating efforts towards growth into a unified whole. Its purpose is to ensure that the processes of production, consumption, and distribution are carried out in accordance with the schedules carefully drawn up in advance. Planning, therefore, involves fixation of certain targets of production and other achievements for the country as a whole, and their co-ordination with a distribution plan and the consumption schedules. The execution of plans inevitably necessitates governmental control in a large measure.

*Planned and unplanned economy.* The difference between a planned and a free economy<sup>2</sup> is not that one is characterised by order and the

1 "Planning....is thus different from the traditional hit-and-miss methods by which 'reforms' and 'reconstruction' are often undertaken."—First Five Year Plan. pp. 7-8.

2 We use the phrase "free economy" for an economy without planning.

33 Explain the relation between marginal revenue and average revenue and indicate how the difference between the two depends upon elasticity of demand (D U, 1955)

34 Explain elasticity of demand Carefully indicate qualifying assumptions. (P U, 1950)

35 What changes have taken place in the attitude of economists towards the concept of consumer's surplus? Examine the contribution of Hicks in this connection (Edinburgh University 1954)

36 Derive consumer's surplus with the help of the indifference curve technique Show how if at all your technique is an improvement upon Marshall's technique (I A S 1956)

37 Elucidate the doctrine of consumer's surplus How far is it possible to measure this surplus in terms of money? What is the practical use of this doctrine? (D U, 1950)

38 Explain with diagrams marginal utility and consumer's surplus What bearings have these conceptions on the distribution of private expenditure? (Edinburgh University 1952)

### C Theory of Production

39 Assign the place of the entrepreneur in modern industry Describe his functions (P U 1950)

40 "The limited liability company is a great economic invention —Justify this statement. (D U 1950)

41 Public corporations happily combine social objectives with commercial efficiency' Discuss with reference to British and Indian experience (I A S, 1952)

42 What do you understand by capitalistic production? What are its advantages? Is capitalistic production associated with capitalism only? (D U, 1952)

43 What are the shortcomings of the national dividend approach to the assessment of general economic welfare? Is there a satisfactory alternative? (Edinburgh University 1954)

44 Examine the relation between wealth and welfare (D U, 1950)

45 Discuss the method of computing national income in a country Why is it considered necessary to have national income estimates in India first before undertaking a comprehensive enquiry of the tax structure? (I A S, 1950)

46 Explain clearly the technique of national income determination and comment upon the difficulties in applying it to a country like India. (I A S 1953)

47 Which are the major components of net national product? Discuss the problem raised by each for the national income statistician (I A S, 1953)

48 Discuss Marshall's doctrine of maximum satisfaction in the light of modern welfare economics (I A S, 1951)

49 Division of labour is limited by the extent of the market Discuss. (P U, 1943)

50 What is meant by the mobility of labour? What are the obstacles to the mobility of labour in India and its consequent results. (P U, 1944)

51 Examine the chief factors which determine the efficiency of labour in a modern industry (P U, 1946)

52 Discuss the effects of introduction of machinery on the working class. (P U, 1947)

53. How is the location of industry determined? How far is it necessary to regulate it in the interest of the community? (*I. A. S.*, 1949).

54. What guidance can economic theory offer in regard to the optimum location of industries? In the light of your answer outline a policy for the location of industries in India (*I. A. S.*, 1952).

55. Indicate how far the classical law of diminishing returns is a dynamic concept. To what extent, if at all, would diminishing returns be a limiting factor in the economic development of an underdeveloped country? (*I. A. S.*, 1955).

56. Explain the law of diminishing returns and show how it is a statement relating to the limitation of substitution of one factor of production for another. (*P. U.*, 1951).

57. What is meant by the principle of equ marginal returns? Explain its importance in Economics. (*P. U.*, 1944).

58. "The law of diminishing returns is just as true of manufacture as it is of agriculture." Discuss, and explain the relation between the law of increasing and diminishing returns. (*Edinburgh University*, 1953).

59. Distinguish between external and internal economies of production. Explain the part played by them in bringing about increasing returns. (*D.U.*, 1955).

60. What are 'external economies'?

Indicate the scope of external economies in the context of the economic development of an underdeveloped country. (*D. U.*, 1955).

61. "The advantage of a large firm is that it can carry specialisation further, the strength of the small firm lies in the limits of specialisation." Discuss, making clear the advantages and disadvantages of specialisation. (*Edinburgh University*, 1953).

62. Account for the survival of the small scale business units in spite of the general trend towards mass production. (*D. U.*, 1953).

63. What do you understand by the optimum theory of population? How does this theory differ from the theory of Malthus? (*Edinburgh University*, 1951).

64. In U.K. many people are concerned about the tendency of British population to decline; in India, on the other hand, the prospect of an expanding population raises serious misgivings in the minds of many persons. Explain, in broad terms, the reason for this difference of attitude. (*I. A. S.*, 1947).

65. Analyse the concept of optimum population. (*I. A. S.*, 1948).

66. On what does accumulation of capital depend? Is there a limit to the accumulation of capital? (*Edinburgh University*, 1954).

67. Analyse conditions that are favourable to capital formation. Indicate the assistance the State can render in this regard. (*P. U.*, 1950).

68. Outline a policy for maximising the mobilisation of domestic savings in economically backward countries, illustrating your answer from Indian experience. (*I. A. S.*, 1952).

69. Show the connection between interest rate and capital formation. (*I. A. S.*, 1953).

70. 'Economic development occurs as the result of income shifts from those who will spend less productively to those who will spend more productively.' Discuss. (*I. A. S.*, 1956).

#### D. Theory of Exchange

71. Analyse the essential features of free and full competition. (*P. U.*, 1951).

72. Enumerate the factors which hinder the operation of free competition in a market. What is the nature of the demand curve for the product of an individual under free and full competition? (*P. U.*, 1952).

73 Distinguish between real cost and opportunity cost. Explain briefly the doctrine of opportunity cost, adding your commentary on the same (P.U. 1953)

74 Distinguish between prime and supplementary costs and fully explain the significance of the distinction (P.U. 1951)

75 Indicate the place of supplementary cost in the analysis of short period normal price. How does the short period cost curve differ from the long period cost curve of a firm? (D.U. 1955)

76 Define equilibrium. Indicate the limitations of partial equilibrium analysis (D.U. 1954)

77 Examine the statement "The greater part of economic theory is based upon the concept of equilibrium which has no application to a changing world" (I.A.S. 1950)

78 Discuss the meaning and function of equilibrium in economic analysis (I.A.S. 1952).

79 What are the factors that determine the size of a business unit. Illustrate your answer with reference to business conditions in India (P.U. 1944)

80 Discuss the relative importance of the following factors in determining the size of a firm, (a) Technique of production (b) Finance (c) Marketing problems (Edinburgh University 1950)

81 Both the monopolist and the competitive producers aim at maximising their net gain. Show how they achieve their objective (P.U. 1952)

82 Give an economic analysis of the law of increasing return illustrating your answer by reference to specific industries. Is increasing return compatible with competition? (I.A.S. 1951)

83 If increasing returns prevail in manufacturing industry how is it that the whole supply of a manufactured product does not become concentrated in the hands of one producer? (Edinburgh University, 1950)

84 Explain how in perfectly competitive equilibrium the price of a commodity is equal to its marginal and average cost of production? Illustrate your answer diagrammatically (D.U., 1952)

85 How is simple monopoly price determined? Give illustrations (D.U., 1954)

86 "The real test of monopoly is the power of the seller to raise price without driving away his customers." Discuss this statement (Edinburgh University, 1952)

87 "Monopoly has one thing common with the weather. You may complain but you cannot do much about it." Discuss (I.A.S., 1956).

88 Compare monopoly price with 'competitive price' and state the limitations which prevent a monopolist from raising his price indefinitely (D.U., 1950)

89 What do you understand by Discriminating Monopoly? Mention the conditions under which price discrimination would be successful (D.U., 1953)

90 Discuss the conditions under which discriminating monopoly can be practised, and state how far it can be used as an instrument of economic power. (I.A.S., 1948)

91 Distinguish between imperfect competition and monopolistic competition, and comment upon the difference, if any, which this makes to the determination of the value and output of any given commodity (I.A.S., 1951)

92 It is said that there is idle installed capacity in many industries. How do industries acquire such idle capacity and what are the economic problems that this gives rise to? (I.A.S. 1954)

93. What is the classical concept of industry? What happens to its status when it is taken over into monopolistic competition analysis? (*I. A. S.*, 1953).

94. Explain how price is determined under conditions of oligopolistic competition. (*I. A. S.*, 1956).

95. 'When competitors are few, output and price approximate to those which would prevail under a complete monopoly.' Discuss. (*I. A. S.*, 1952).

96. 'Indicate how the problem of value is influenced by short and long term considerations.' Illustrate. (*P. U.*, 1949).

97. Explain how prices are determined under conditions of perfect competition. Contrast the results with those under imperfect competition. (*I. A. S.*, 1947).

### E Income Earnings

98. Explain the relationship between wages and marginal productivity of labour. Indicate the extent to which this explains differences in wages between, (a) different industries, (b) different occupations. (*Edinburgh University*, 1950).

99. Wages, under competitive conditions, are equal to the marginal as well as average productivity of labour. Explain the above proposition. (*D. U.*, 1951).

100. 'Increased output per head is the only secure basis for higher wages.' Discuss and indicate also the factors which determine the difference in wages in different occupations. (*Edinburgh University*, 1951).

101. Account for differences of wages paid in different industries in the same region and in the same industry in different regions. (*D. U.*, 1954).

102. Examine the basis for the determination of minimum wage rate. Consider the limiting factors. (*P. U.*, 1949).

103. Account for the differences in the levels of wages of industrial workers in different countries. Do you think that this makes any difference to applying an internationally common policy for labour welfare involving financial burdens on industry? (*I. A. S.*, 1952).

104. If in the real world labour market is imperfect, what amendments to the generally accepted theory of wages would you introduce? (*I. A. S.*, 1953).

105. Explain how wages are determined under conditions of monopoly. (*I. A. S.*, 1955).

106. Explain the classical theory of the rate of interest and comment upon the same in the light of modern developments in economic theory. (*D. U.*, 1953).

107. 'The rate of interest, being a price, is determined like other prices, by supply and demand.' Comment. (*D. U.*, 1954).

108. Explain the concept of "liquidity preference." What part does liquidity play in the determination of the rate of interest. (*P. U.*, 1952).

109. Interest balances the supply of capital saving and capital investment. Discuss. (*P. U.*, 1951).

110. Explain some of the theories put forward to explain the taking of interest. Do you consider any theory is necessary? (*Edinburgh University*, 1951).

111. Discuss the Ricardian theory of rent from the modern point of view. (*I. A. S.*, 1948).

112. Give generalised version of the theory of rent from the standpoint of modern economic theory. (*I. A. S.*, 1951).

113. What is the modern theory of rent? Is it an improvement on the Ricardian theory. (*D. U.*, 1950).

114 In what sense is rent a surplus? Do other factors of production also yield rent? (D U, 1953)

115 How would you define economic rent? Show the essential relation between rent and price and consider the assertion that profits are of the same genus as rent (Edinburgh University, 1953)

116 Distinguish between rent and quasi rent and explain that 'rent is the leading species of a large genus' (D U 1952)

117 Distinguish between rent and quasi rent. Point out how rent and quasi rent are related to transfer earning (P L 1951)

118 Explain the different elements which may be included in the term profits. Which, if any, of these elements may be regarded as arising from the exploitation of labour? (Edinburgh University, 1951)

119 'Profits are the natural economic reward for the services rendered by capital in production.' Discuss this statement (Edinburgh University 1952)

120 Examine carefully the nature of profit as reward for economic service (I A S, 1947)

121 'Profits are partly in the nature of wages and partly in the nature of rent, but the essence of profits is their unpredictability.' Discuss. (D L 1952)

122 Discuss the part played by uncertainty and risk in the determination of profits (I A S 1950)

123 'Profits are dynamic in their origin institutional in their appropriation.' Comment (I A S, 1952)

124 State and explain Knight's theory of profits (I A S 1953)

125 Explain clearly the marginal productivity theory of distribution and indicate its limitations (D L 1952)

126 State the theory of marginal productivity and review the assumptions underlying it (D L 1952)

127 Explain how far the theory of marginal productivity applies to the determination of entrepreneur's profit (D U, 1949)

128 If wages are determined by marginal productivity of labour trade unions are superfluous. Examine this statement. (I A S 1947)

129 Discuss the view that the demand for labour is not a function of the wage rate (as implied by the marginal productivity approach) but depends upon the level of expected sales (Edinburgh University 1951)

130 "The restoration of supply-demand mechanism in the fixation of wage rate is essential" (J. E. Meade) Discuss this statement (Edinburgh University 1951)

131 Show how far Fuller's theorem is applicable to the solution of adding up problem in the theory of distribution (I A S, 1950)

132 Analyse the problem of inequality of incomes in modern society and suggest remedies. (D L 1952)

## P Money, Banking, and Employment

133 'Money is as no man does'. Do you consider this statement a useful contribution to the understanding of the nature of money? (Edinburgh University, 1950).

134 Critically examine the functions of money. Why is it necessary to have control over the issue of money? (D L, 1949)

135. Explain the main functions of money and compare the efficiency of the gold and paper pound in performing these functions. (*Edinburgh University, 1953*).

136. 'Money is the basis of the pricing process by means of which the economy is guided.' Fully explain, pointing out the role of money in the economy. (*D. U., 1952*).

137. 'Thus money which is a source of so many blessings to mankind, becomes also, unless we control it, a source of peril and confusion.' Discuss. (*P.U., 1941*).

138. What part may the banks play in the economic development of a country? Discuss in this connection the services rendered by banks to industry and trade. (*D. U., 1950*).

139. Summarise the principal functions of commercial banks. What other services do they perform for individuals and business? (*D. U., 1950*).

140. In what sense is it true that bankers create credit? Is there any limit to the expansion of credit at any time? (*Edinburgh University, 1952*).

141. How do banks create credit? Discuss in this connection the role of bank credit in national economy and the importance of controlling such credit. (*D. U., 1951*).

142. What are the limitations on the power of banks to create credit? How far are these reduced or removed by the existence of a Central Bank. (*I.A.S., 1947*).

143. How do the banker, the customer, and the community generally benefit from the use of cheques. (*P. U., 1946*).

144. What do you mean by value of money? How is the value of money determined? (*D. U., 1953*).

145. What are the theoretical and practical difficulties of measuring changes in the value of money? (*D. U., 1949*).

146. What meaning and importance do you attach to the concept of velocity of circulation of money. (*Edinburgh University, 1954*).

147. What do you understand by "demand for money"? Examine the effect of changes in the demand for money on the price level. (*D. U., 1954*).

148. Indicate the nature of relationship between money and prices. What factors influence this relationship? Evaluate their relative importance. (*D. U., 1950*).

149. How does Fisher's version of the Quantity Theory of Money differ from Pigou's? Which of the two do you prefer and why? (*D. U., 1953*).

150. What is the quantity theory of money? Does this theory give an adequate explanation of the forces governing the value of money? (*P. U., 1951*).

151. Is it a valid criticism of the Quantity Theory of Money that, as ordinarily stated, it explains changes in the value of money, rather than the value of money. (*Edinburgh University, 1954*).

152. Consider the effects of rising and falling prices upon different sections of the community. (*P. U., 1946*).

153. 'Any violent or prolonged exhibition of instability in the value of money affects not only the distribution but also the creation of real wealth.' Examine the terms of this statement and discuss its validity. (*Edinburgh University, 1951*).

154. What is inflation? What are its causes?

Analyse the effects of war-time and post-war inflation in India on different classes of people in the community. (*D. U., 1951*).

155. There can be a general rise and fall of prices, but there cannot be a general rise and fall of values. Explain. (*P. U., 1941*).

- 166 Bring out carefully the economic consequences of currency inflation (P.U., 1953)
- 157 Describe the functions of a Central Bank in the banking system of a country. How does a Central Bank influence the price level? (D.U. 1953)
- 158 Explain the techniques employed by a Central Bank to control credit? How far are these techniques effective? (D.U. 1954)
- 159 Consider the need for controlling monetary supply. Briefly enumerate the more important methods which the Central Bank of a country may adopt to control such supply. (P.U. 1951)
- 160 Explain the significance of bank rate. How does it influence the general level of production and prices business activity and employment? (D.U. 1952)
- 161 Can the rate of interest be an effective instrument in procuring economic stability? (Edinburgh University 1954)
- 162 Examine the relation between the short rate and the long rate of interest. Why is the latter found to be more stable than the former? (I.A.S., 1952)
- 163 What are the essential features of a gold standard? Distinguish in this connection between a gold currency standard and gold exchange standard. (D.U., 1953)
- 164 Consider the advantages and disadvantages of (a) a full gold standard, (b) a gold exchange standard. Refer to experience (Edinburgh University 1953)
- 165 What were the rules of the game in the operation of the gold standard (Edinburgh University 1954)
- 166 The case for the gold standard is the case for a strict *de jure* gold standard, with each country following the rules. Explain and illustrate (P.U., 1941)
- 167 What do you understand by the 'Gold Bullion Standard'? How does it differ from the 'Gold Exchange Standard'? (P.U. 1946)
- 168 Elucidate the merits and drawbacks of a paper currency system. Indicate methods of control (P.U., 1949)
- 169 In what ways could the International Monetary Fund be termed as a return to a gold standard? What (if any) are the fundamental differences (Edinburgh University 1954).
- 170 Describe the constitution and functions of International Monetary Fund. How far does it control the currency systems of its member countries? (I.A.S., 1949)
- 171 Discuss the role of International Monetary Fund in promoting the stability of exchange rates. (I.A.S. 1953)
- 172 Examine the view that every increase in production creates its own demand. (Edinburgh University 1958)
- 173 Discuss the place assigned to the "multiplier" in recent discussions on unemployment and trade fluctuations. (Edinburgh University 1951)
- 174 What is the schedule of marginal efficiency of capital tell us about what the rate of interest is, but the point to which the output of new investment will be pushed given the rate of interest. Discuss this statement. (Edinburgh University 1954)
- 175 What is the contribution of Keynes to the theory of interest? How according to the Keynesian theory does the rate of interest affect the volume of employment and the national income? (I.A.S. 1952)
- 176 Show how changes in investment bring about changes in national income and employment (I.A.S. 1955)

177. Examine the role of expectation in modern economic analysis. (*I. A. S.*, 1952).
178. Give a brief but lucid account of the Keynesian theory of employment, and comment upon its validity as a complete explanation of the presence of involuntary unemployment in a capitalist society. (*I. A. S.*, 1951).
179. Discuss the major contribution of Keynes to economic thought. (*I.A.S.*, 1950, 1952).
180. Analyse briefly the theory of employment. Can you explain unemployment in India in terms of this theory? (*I. A. S.*, 1954).
181. Review critically the effectiveness of the various steps that the State can take to combat unemployment. *D. U.*, 1954.

#### Public Finance. International Trade. & Planning

182. Examine the principles which should govern public expenditure and bring out their implications. *D. U.*, 1951.
183. Discuss the principles on which a rational policy of taxation is based. Justify in this connection progressive taxes. *D. U.*, 1950.
184. Give a critical exposition of the economic theory, if any, underlying the measures of taxation and public expenditure that are said to contribute to the building up of a welfare state. *I. A. S.*, 1951.
185. Explain the principle of maximum Social Advantage and illustrate its usefulness in evolving a suitable policy of public expenditure. *D. U.*, 1953.
186. What are the main influences that have contributed to the application of the progressive principle in taxation? (*Edinburgh University*, 1952).
187. How far does the law of diminishing utility provide a theoretical basis for (a), a minimum income free from taxation. (b) Progressive taxation? (*Edinburgh University*, 1953).
188. Discuss the practical importance of the study of the incidence of taxation. How would you determine the incidence of tax on a consumable commodity? (*P. U.*, 1939).
189. Suggest a scheme for measuring the incidence of taxation in India. What measures would you take to bring about a more equitable distribution of burden of taxation in the country? (*I. A. S.*, 1953).
190. Show how the effect of a tax on the price of a commodity is related to the conditions under which the commodity is produced. (*Edinburgh University*, 1951).
191. How far can unemployment be remedied or prevented by compensatory public expenditure? (*I. A. S.*, 1948).
192. 'International trade in commodities is a substitute for international mobility of factors of production.' Explain. *I. A. S.*, 1956.
193. Explain how two countries with similar climate and resources may both gain from international trade. Under what circumstances would trade not flourish between them? (*Edinburgh University*, 1951).
194. Explain the theory of comparative costs. Can you apply this theory to trade between regions within a country? (*D. U.*, 1953).
195. Explain the theory of comparative costs in the light of modern refinements. (*D. U.*, 1955).
196. Explain the concept of elasticity of supply and demand, and state its bearing on (a) taxation. (b) terms of trade. (c) price-fixing policy of monopolies. (*I. A. S.*, 1948).

197. Distinguish between balance of trade and balance of Accounts Explain main items of a country's balance of accounts (*D. U.*, 1951)
- 198 'The balance of payments always balances' How then do you explain equilibrium in the balance of payments? Give illustrations (*I. A. S.*, 1954)
- 199 Discuss the merits of different ways of rectifying a deficit in the balance of payments (*Edinburgh University*, 1954)
- 200 Weigh the effects of Devaluation on the economy of a given country that may happen to adopt it (*P. U.*, 1950)
201. What is meant by balance of payments? How can an adverse balance of payments be corrected? (*P. U.*, 1946)
- 202 Economic theory would probably indicate a universal adoption of free trade. Yet protection has become universal. How do you explain this fact? (*D. U.*, 1951)
- 203 Discuss the case for protection in the light of modern economic conditions (*P. U.*, 1951)
- 204 'The validity of the argument for a free trade policy in any country does not depend on the adoption of the same policy in other countries' Discuss (*I. A. S.*, 1947)
- 205 What are the advantages and disadvantages of imposing quantitative restrictions on imports to protect domestic industries? (*I. A. S.*, 1955).
- 206 What are the theoretical principles of developmental tariff for an underdeveloped economy? (*I. A. S.*, 1952)
- 207 Examine the theoretical possibilities of combating unemployment by tariffs (*I. A. S.*, 1953)
- 208 What is dumping? What are its effects on international trade? Are anti-dumping duties always effective? (*D. U.*, 1949)
- 209 What do you understand by the term "foreign exchange?" Discuss the uses of foreign exchange and the purposes for which it is ordinarily required (*D. U.*, 1950)
- 210 Explain the purchasing power parity theory and examine its validity in the light of experience (*I. A. S.*, 1949)
- 211 Discuss the extent to which the purchasing power parity theory explains the rates of exchange between two countries. (*Edinburgh University*, 1953).
- 212 Explain the relation between the quantity theory of money and the purchasing power theory of foreign exchange. In what respects is the latter theory effective? (*Edinburgh University*, 1952)
- 213 Discuss the influences that determine the external value of a currency, (a) under gold standard conditions, (b) under inconvertible paper currencies (*Edinburgh University*, 1951)
- 214 'When a country is on a gold standard, the internal value of its currency is determined by its external value, when it is not on a gold standard, the position is reversed. Examine this statement' (*Edinburgh University*, 1954)
- 215 Discuss the view that we should aim at the stabilisation of the internal rather than the foreign exchange rate of our currency. Consider also the means available for attaining this and the extent to which you would expect them to be effective (*Edinburgh University*, 1953)
- 216 'It matters little whether prices are high or low, so long as they remain stable' Discuss in relation to theories of stabilisation (*Edinburgh University*, 1950)

217. 'The craze for stability can be overdone.' How far and in what sense is stability (a) desirable, (b) attainable? (*Edinburgh University*, 1954).
218. Argue the case for and against adopting exchange stability as the goal of monetary policy. (*D. U.*, 1953).
219. Indicate a solution of conflict between monetary policies designed to preserve internal and external equilibrium. (*D. U.*, 1950).
220. Analyse the essentials of a planned economy. (*P. U.*, 1950).
221. Elucidate the sanctions that lie behind state planning. Consider limitations (*I. A. S.*, 1948).
222. "Democratic planning is a contradiction in terms." Elucidate and comment. (*I. A. S.*, 1949).
223. What are the sacrifices involved in planning in underdeveloped countries? Illustrate from Indian conditions (*I. A. S.*, 1950).
224. Discuss, with special reference to India, the difficulties of financing economic development in underdeveloped countries. (*I. A. S.*, 1951).
225. Give a brief account of the controls that are essential for the successful working of a planned economy. (*I. A. S.*, 1952).

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